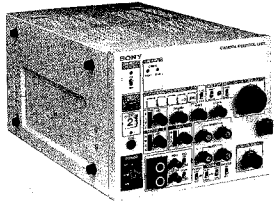
SONY

CAMERA CONTROL UNIT

CCU-355P



OPERATION AND MAINTENANCE MANUAL

2nd Edition (Revised 2)

Serial No. 43101 and Higher

EBU N-10 LEVEL

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1-2. Precautions

On installation

Location

- Install the unit in a location which is dry and well ventilated as possible.
- Avoid installing the unit near heat sources and in rooms with a high temperature.
- Avoid locations susceptible to dust and a great deal of vibration.
- Avoid places with strong magnetic fields.
- Avoid places where the unit will be exposed to direct sunlight and powerful electric lights.

Rack mounting

By using the optional RMM-301 rack-mounting metal, it is possible to mount two units side by side in an EIA standard rack. Mount the units so that they are not positioned above a power source or any other heat-generating unit.

On operation

Cable insertion and extraction

Do not insert nor extract the triaxial cable connector while the CCU-355P power is on.

Inoperative controls on the camera

When the CCU-355P is connected to the camera, some switches and controls on the camera cannot be controlled by the CCU-355P. For details, refer to the operation manual of the camera or camera adaptor.

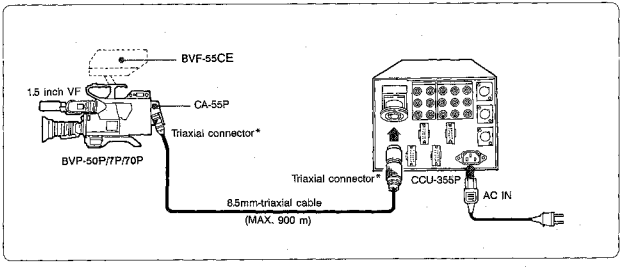
Connection to a RCP remote control panel/MSU master setup unit

When a remote control panel or an MSU-350 master setup unit is connected to the CCU-355P, first check that the panel's display operates normally after turning the POWER switch on.
Second, press the PANEL ACTIVE button.

1-3. Camera Connections

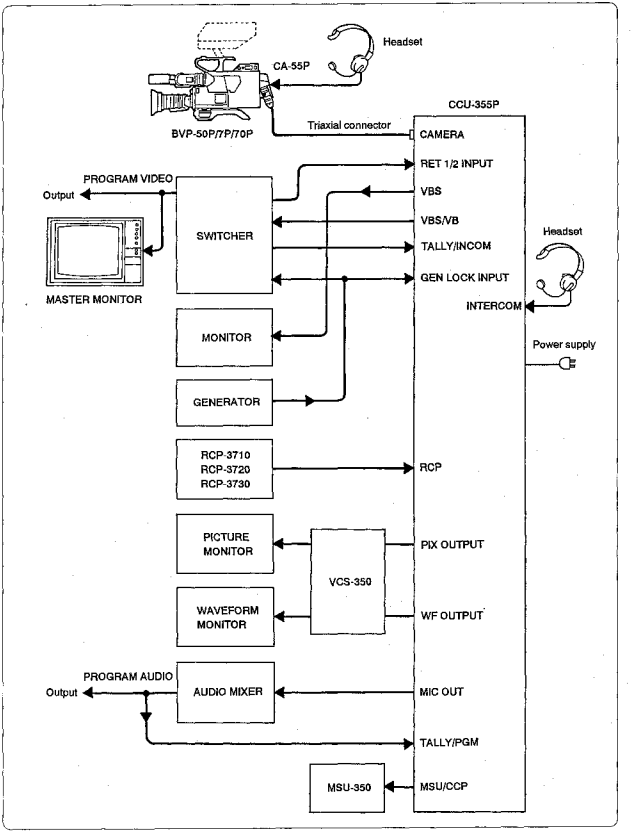
Connection to the BVP-50P/7P/70P

Install the CA-55P to the BVP-50P/7P/70P.



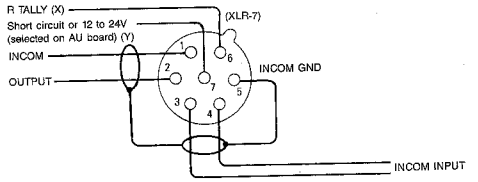
* Use the triaxial connector manufactured by FISCHER.

1-4. System Connections

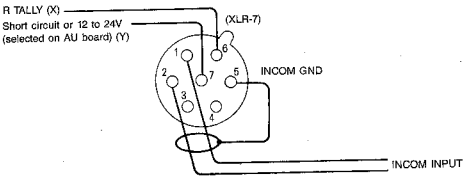


R TALLY/INCOM connector wiring diagram

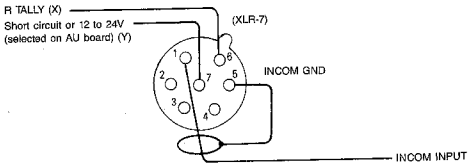
- **4-wire system**



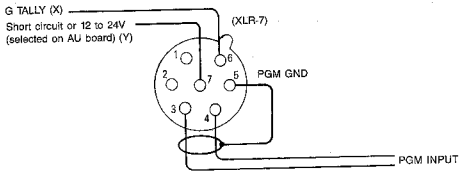
- **2-wire system**



- **RTS**



G TALLY/PGM connector wiring diagram



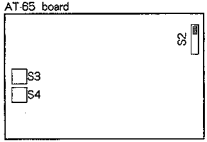
Connection to the MSU-350/370

Some connections require switch setting on the circuit boards in the MSU and CCU-355P. For details, refer to the instruction manual furnished with each unit.

MSU-350/370
When a CCU-355P is connected to either of the CCU connectors on the rear panel of the MSU, be sure to terminate the connector with switch in the MSU.
(For details, refer to the instruction manual of MSU)

CCU-355P
To connect the CCU-355P to the MSU, set switches S2, S3, S4, and S6 on the AT-65 board of the CCU-355P as shown below.

AT-65 board



S2 (SYSTEM MODE)
When the CCU is connected to a MSU-350/370 system or RCP-3730, set the switch to the 370 position.
(When the CCU is connected to a MSU-360 system, set the switch to the 360 position)

S3 (GROUP SELECT)
When the VCS-350 connected to the PIX/WF OUTPUT signals from the CCU, is set to the sub mode (expansion mode), set the switch according to the PIX/WFM connector numbers of the VCS (main mode) and input the VCS's (sub mode) WFM/PIX OUTPUT signals.

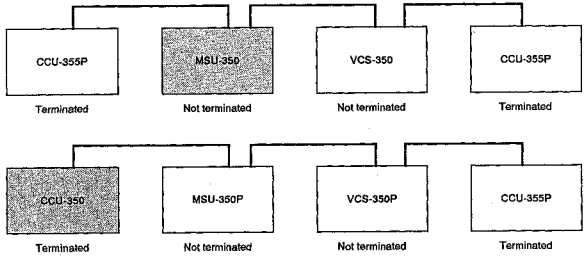
PIX/WFM connector	Switch setting
8 (For MSU-350/370)	1
7	2
6 (For MSU-370)	3
5	4

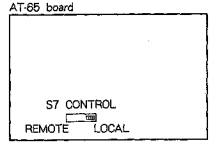
- Normally, set the switch to 0.

S4 (CAMERA SELECT)
Set the switch according to the connector of the MONITOR IN 1 through 8 connectors on the VCS-350/370 to which the CCU-355P is connected.

S6 (TERMINATION)
When the CCU-355P is connected in a chain configuration, set the switch to OFF (not terminated). When the CCU-355P is used alone or when it is the last machine of the chain connection, set it to ON (terminated).

Example of termination





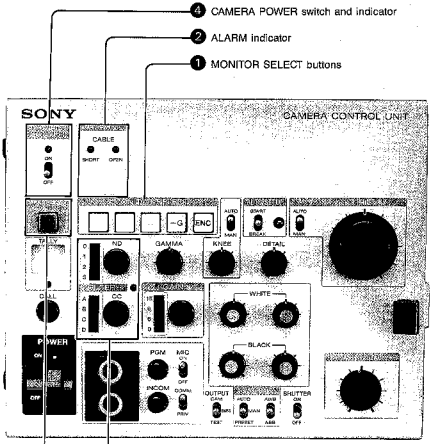
S7 (CONTROL)
When you use a remote control panel such as MSU or RCP, set the switch to the REMOTE position.

In this case, the switches and controls on the CCU-355P control panel cannot be used, and the filter indicators, GAIN indicator and MONITOR SELECT buttons on the CCU-355P indicate the camera head settings.

When you use the front panel of the CCU, set the switch to the LOCAL position.

1-5. Location and Function of Parts

1-5-1. Front Panel



❶ MONITOR SELECT buttons

Select one of the 5 buttons (R, G, B, -G or ENC) to determine the signal to be fed to the picture monitor.

R, G, B, -G: Press one or more of these four buttons to create the composite signal. For example: R and -G=R-G signal. (G-G signal is not available.)
When switch S2 (SYSTEM MODE), on the AT circuit board, it set to the 370 position, the "-G" button cannot be used.

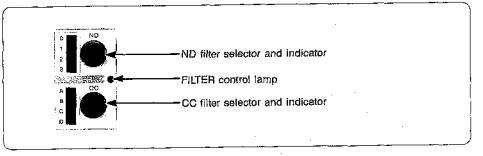
❷ ALARM indicator

Lights when there is a trouble with the triaxial cable.

SHORT: Lights to indicate that there is an overcurrent flowing through the triaxial cable, or that there is a short circuit in the unit.

OPEN: Lights to indicate that triaxial cable is open, or that no camera is connected to the CAMERA connector on the rear panel.

❸ FILTER selectors, indicators and control lamp



When the FILTER control lamp comes on, select both a CC and ND filter using the CC and ND selectors. When a filter has been chosen, its indicator lamp will light up.

When the FILTER control lamp is off, the selectors will not function and the filter indicators will be lit to show which filters are currently used on the camera.

- If the connected camera does not have filter indicating function, the FILTER control lamp on the CCU-355P is off and filter selectors cannot be used.

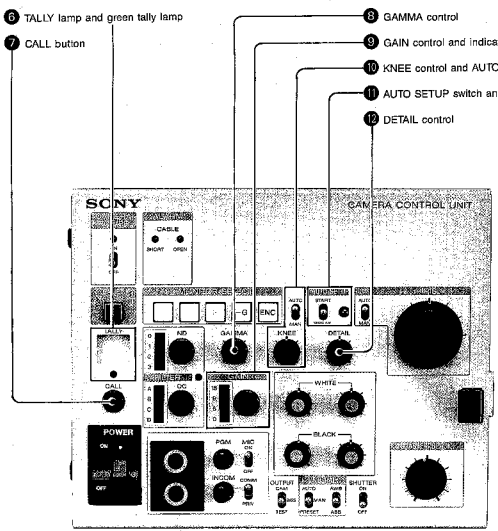
❹ CAMERA POWER switch and indicator

Switches the power supply to the camera head when the camera head is connected to this unit correctly.
The indicator lights when the power is turned ON.

❺ PANEL ACTIVE button

When it is possible to use the CCU-355P control panel, this button will be lit. When the button is off, it is not possible to operate any controls except the MONITOR SELECT buttons.

- When switch S7 (CONTROL), on the AT circuit board, it set to the REMOTE position and the ACTIVE button is pressed, the button is not lit.
  Then, none of the CCU control operations can be used.


6 TALLY lamp and green tally lamp
7 CALL button
8 GAMMA control
9 GAIN control and indicator
10 KNEE control and AUTO/MAN switch
11 AUTO SETUP switch and indicator
12 DETAIL control
SONY
CAMERA CONTROL UNIT
CABLE
SHORT
OPEN
ENC
AUTO
START
AUTO
TALLY
CALL
AUTO
GAMMA
KNEE
DETAIL
WHITE
BLACK
POWER
ON
OFF
PGM
MIC
GAIN
IN COM
OUTPUT
SHUTTER
ON
OFF

⑥ TALLY lamp and green tally lamp

TALLY lamp

When lit, it indicates that the picture being shot by the camera which is connected to the unit is on the air or recorded on the main VTR. This lamp also lights up when the CALL button ⑦ is pressed (If the CALL button is pressed when the TALLY lamp is lit, the lamp will go off). Put the supplied camera number plate on the lamp.

Green tally lamp

The green TALLY lamp is lit when a picture from the camera which is connected to the unit recorded on a sub-VTR.

⑦ CALL button

While the CALL button is being pressed, both the tally lamp in the view finder of the camera and the tally lamp of the CCU-355P are lit.

⑧ GAMMA control

Adjusts the master gamma of the signal.

⑨ GAIN control and indicator

The video gain can be increased up to 4 steps (0 dB, +6 dB, +9 dB and +18 dB) by turning this control. The gain you have selected is shown by the indicator lamps.

⑩ KNEE control and AUTO/MAN switch

Set the switch to AUTO to adjust the knee point automatically when the light entering the camera reaches a level which is too intense. To adjust the knee point manually, set the switch to MAN.

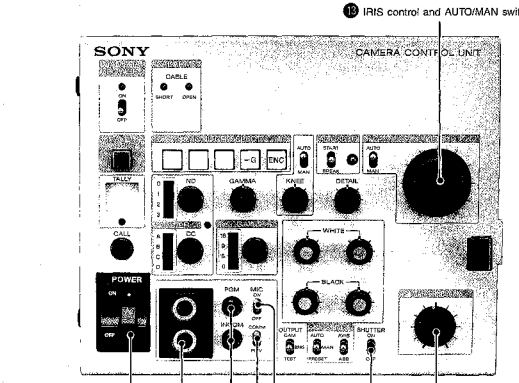
⑪ AUTO SETUP switch and indicator

To activate the automatic setup function of the camera, set the switch to START. When setup starts, the indicator will begin to blink and when setup is complete, the green indicator will go off within a few seconds. To stop setup during operation, push the switch down to BREAK.

- The indicator lamp will also start to blink when automatic white or black balance adjustment begins. This lamp will be green when the adjustment is finished, but if the adjustment was interrupted for some reason, the indicator will blink in red.

⑫ DETAIL control

Adjust the contour correction level.


SONY
CAMERA CONTROL UNIT
CABLE
SHORT
OPEN
ON
OFF
TALLY
CALL
POWER
ON
OFF
NO
GAMMA
KNEE
DETAIL
WHITE
BLACK
PGM
MIC
OFF
OUTPUT
SHUTTER
ON
OFF
TEST
AUTO
ABB
IRIS control and AUTO/MAN switch
POWER switch
PGM/INCOM headset double jack
PGM/INCOM level controls
COMM/PRIV selector
MIC switch
MASTER BLACK
(pedestal level) control
SHUTTER switch

⑬ IRIS control and AUTO/MAN switch
When the switch is set to AUTO, the camera lens goes into the AUTO IRIS mode.
When the switch is set to MAN, the iris can be controlled using the IRIS control.
- When the switch is set to AUTO, the iris can be controlled by about 0.5 iris with the control.
- Neither the switch nor the control can be used when the IRIS switch on the camera's lens is set to manual mode.

⑭ POWER switch
To turn the power of the CCU-355P on or off.

⑮ PGM/INCOM (program/intercom) headset double jack
The upper jack can receive the program sound which is for on the air and the lower jack can receive sound from the intercom.
Connect a headset which has a double plug. The intercom voice will be sent out from both the upper and lower jacks.

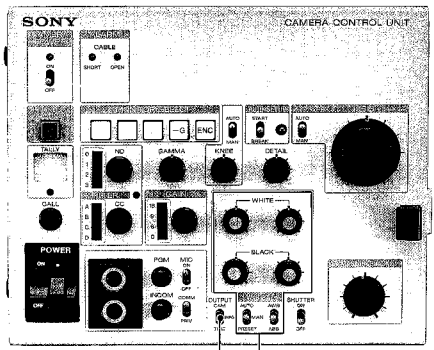
⑯ PGM/INCOM (program/intercom) level controls
Use these controls to adjust the level of the program and intercom sounds being received by the headset.

⑰ COMM/PRIV (communication/private) selector
Allows you to either connect the external intercom or to cut it off from the private intercom.
COMM: The external intercom system (which allows communication with outside units such as the control console) and the internal intercom system (which allows communication between the camera and the CCU-355P unit) are connected side by side.
Communication between the three units, i.e. the external system and the camera and the CCU-355P unit is possible.
PRIV: The external intercom system is cut off and communication between the camera and the CCU-355P only is possible.

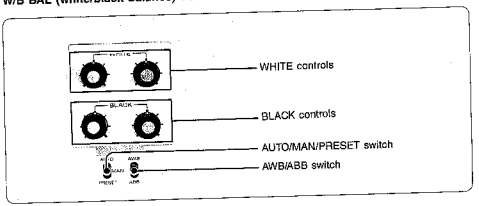
⑱ MIC switch
To turn the microphone which sends the intercom voice out on or off.

⑲ MASTER BLACK (pedestal level) control
Adjusts the master black level of the camera.

⑳ SHUTTER switch
To turn the electronic shutter of a CCD camera on or off.
- The shutter speed can be changed with the SHUTTER SPEED selector behind the front panel. For details, refer to the operation manual of the camera.


SONY
CAMERA CONTROL UNIT
CABLE
SHORT
OPEN
ON
OFF
TALLY
CALL
POWER
ND
GAMMA
KNEE
DETAIL
CC
PGM
MIC
INCOM
WHITE
BLACK
OUTPUT
SHUTTER
21 W/B BAL controls and switches
22 OUTPUT selector

㉑ W/B BAL (white/black balance) controls and switches



WHITE/BLACK controls
With the AUTO/MAN/PRESET switch set to MAN or AUTO, adjust the white balance using the WHITE controls. Black balance can be adjusted at any time with the BLACK controls. The left control adjusts the red and the right control adjusts the blue.

- After automatic white or black balance adjustment, the level is increased or decreased from the automatically adjusted level by turning the control. Turn the control clockwise to increase the level and counterclockwise to decrease the level.
- BLACK controls can be used for flare adjustment by setting the S-4 switch on the IF-177 board to ON. For details, refer to SECTION 2 and later.

AUTO/MAN/PRESET switch
Select how to adjust white and black balance.
AUTO: For automatic adjustment
MAN: For manual adjustment using the controls
PRESET: For the preset white balance. (Black balance can be adjusted with the controls.)

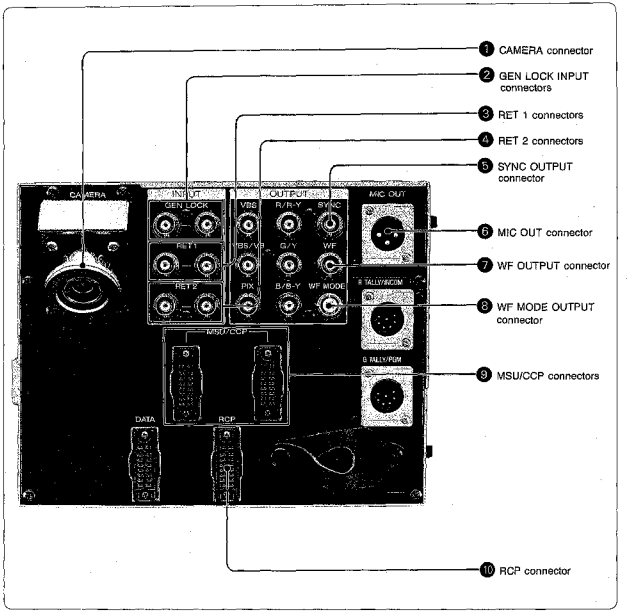
AWB/ABB (automatic white balance/automatic black balance) switch
With the AUTO/MAN/PRESET switch set to AUTO, start the automatic white balance adjustment by pushing the switch up to AWB. To start the automatic black balance adjustment, push the switch down to ABB.

- Once an automatic white or black balance adjustment has begun, the AUTO SETUP lamp ⑪ starts to blink. It will be green when adjustment is finished. If automatic adjustment is interrupted or cannot be completed for some reason, the lamp will blink in red.

㉒ OUTPUT selector

Select the signals to be output from the WF OUTPUT ⑦, VBS/VB OUTPUT ⑫, VBS OUTPUT ⑬ and PIX OUTPUT ⑭ connectors. Note that when the ENC button (see MONITOR SELECT buttons) has not been depressed, the signals picked up by the camera is output from ⑦ and ⑭ connectors even if BARS is selected.
CAM: To pick up signals via the camera
BARS: To receive the color bar signal generated in the CCU-355P
TEST: To receive the camera's test signal

1-5-2. Rear Panel



❶ **CAMERA connector** (triaxial connector)
Connect a camera using a triaxial cable (optional).

❷ **GEN LOCK INPUT connectors** (BNC type)
These connectors receive black burst (or VBS) signal which is for gen-lock of the camera. When a reference signal is fed to the connector, the camera signal will be synchronized.
The camera becomes locked to its own internally generated sync signal if the reference signal is not supplied.

❸ ❹ **RET (return video) 1/2 INPUT connectors** (BNC type)
The video signals returning from two different units can be received here. Either the RET 1 or RET 2 signal can be selected for monitoring with the controls on the camera.

> One of the two adjacent connectors of ❷, ❸ and ❹ is used for the bridging connection. When only one of the two is used, be sure to terminate the other by 75 ohms.

❺ **SYNC OUTPUT connector** (BNC type)
The sync signal (0.3 Vp-p, 75 ohms), generated by the built-in sync generator, is output here. Connect to the sync signal input connector of a waveform monitor.

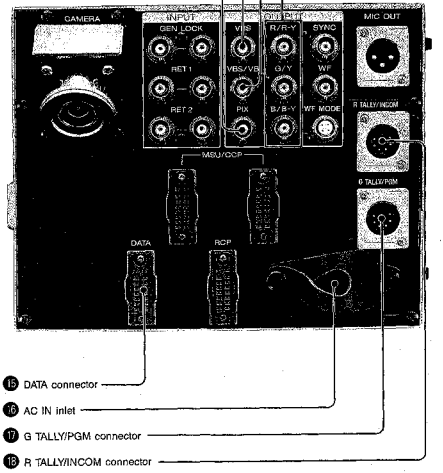
❻ **MIC OUT connector** (XLR 3-pin)
Sound picked up with the microphone of the camera is amplified and output here. The output level can be set with the MIC switch on the circuit board inside the CCU-355P.

❼ **WF (waveform monitor) OUTPUT connector** (BNC type)
The video signal is output here for a waveform monitor. The output signal is selected with the WAVEFORM MONITOR SELECT buttons on the BKP-3601 camera control panel or other connected controllers.

❽ **WF MODE (waveform mode) OUTPUT connector** (4-pin)
To monitor the signals in sequential mode, connect a Tektronix waveform monitor here. When the SEQ button on the BKP-3601 camera control panel etc. is pressed, a staircase signal will be output from this connector, and the R, G and B signals can be monitored simultaneously in sequential mode.

❾ **MSU/CCP (master setup unit/camera control panel) connectors** (16-pin)
Connect an MSU-350 master setup unit (optional) or a BKP-3601 camera control panel (optional) with a CCA-2A or CCA-1 connecting cable respectively. When a BKP-3601 is connected, power will be supplied to the BKP-3601 through this connector.
- One of the two connectors is used for the bridging connection of the MSU-360. When an MSU-350 is connected to one connector, two or more CCU-355Ps can be controlled simultaneously through the bridging connection.

❿ **RCP (remote control panel) connector** (16-pin)
Connect an RCP-3711/3721/3731 series remote control panel using a CCA-2 connecting cable here. Power and control signals are fed and supplied.


⓫ R/R-Y, G/Y, B/B-Y OUTPUT connectors
⓬ VBS/VB OUTPUT connector
⓭ VBS OUTPUT connector
⓮ PIX OUTPUT connector
CAMERA
INPUT
GEN LOCK
RET 1
RET 2
VBS
VBS/VB
PIX
OUTPUT
R/R-Y
G/Y
B/B-Y
SYNC
WF
WF MODE
MIC OUT
R TALLY/INCOM
G TALLY/PGM
MSU/CCP
DATA
RCP
⓯ DATA connector
⓰ AC IN inlet
⓱ G TALLY/PGM connector
⓲ R TALLY/INCOM connector

⓫ **R/R-Y, G/Y, B/B-Y OUTPUT connectors** (BNC type)
Using the switch on the EN board, an R or R-Y, G or Y, or B or B-Y signals can be selected and sent from these connectors.

⓬ **VBS/VB OUTPUT connector** (BNC type)
The signal picked up by the camera is output as a composite video signal (VBS) here. The signal can be changed into a VB signal with the switch on the EN board.

⓭ **VBS OUTPUT connector** (BNC type)
The signal picked up by the camera is output as a composite video signal (VBS) here.

⓮ **PIX (picture monitor) OUTPUT connector** (BNC type)
The video signal for a picture monitor is output here. The signal is selected with the MONITOR SELECT buttons on the front panel or on the BKP-3601 camera control panel, etc.

⓯ **DATA connector**
Not used.

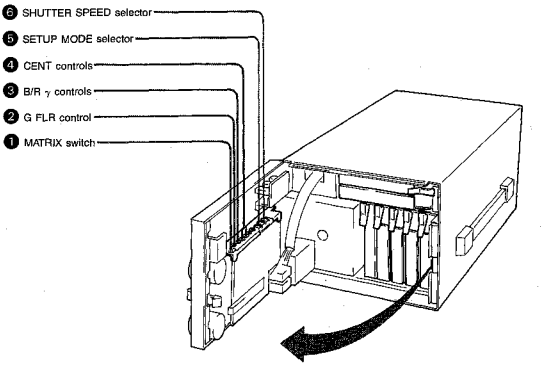
⓰ **AC IN inlet**
Connect to an AC power source with the supplied power cord.
Fasten the plug with the plug strap.

⓱ **G TALLY/PGM (green tally/program) connector** (XLR 7-pin)
Green tally and program audio signals are input and output here. Connect a control console, or other control equipment here.

⓲ **R TALLY/INCOM (red tally/intercom) connector** (XLR 7-pin)
Red tally intercom audio signals are input and output here.
Connect a control console, or other control equipment here.

1-5-3. Behind the Front Panel

For details on the switches and controls, refer to SECTION 2 and later.



Push the lever to the right to open.

❶ MATRIX-Schalter
Zur Ein- und Ausschaltung des Linear-Matrix-Schaltkreises der angeschlossenen Kamera. Dieser Schalter arbeitet nur, wenn die Kamera ebenfalls einen entsprechenden Schalter besitzt.

❷ G FLR-Regler
Zur Einjustierung des G-Flare-Wertes. (Um diesen Regler verwenden zu können, muß der S-4-Schalter an der Leiterplatte IF-177 auf ON gestellt werden. In der Position OFF kann der G FLR-Regler nicht verwendet werden.)
- Wenn der S-4-Schalter der IF-177 auf ON steht, können die R- und B-Flare-Werte an den BLACK-Reglern des vorderen Bedienungspultes eingestellt werden.

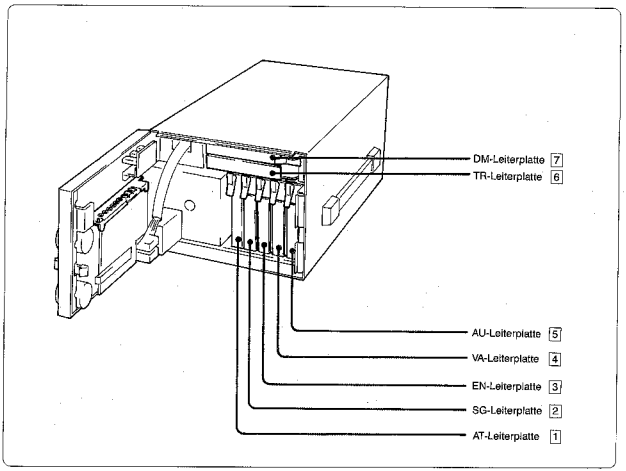
❸ B/R γ-Regler
Der linke Regler dient zur Einstellung des Gammawertes des B-Signals und der rechte Regler zur Einstellung des Gammawertes des R-Signals.

❹ CENT-Regler
Der linke Regler dient zur horizontalen und der rechte Regler zur vertikalen Registrierungs-Einstellung. Zur Einstellung des R-Signals muß mit den MONITOR SELECT-Tasten an der Vorderseite auf R-G und zur Einstellung des B-Signals auf B-G geschaltet werden. (Bei Wahl eines anderen Signals arbeiten die CENT-Regler nicht.)
- Bei Verwendung einer CCD-Kamera können diese Regler nicht verwendet werden.

❺ SETUP MODE-Wähler
Zur Wahl des automatischen Setup-Modus.

❻ SHUTTER SPEED-Wähler
Zur Wahl der elektronischen „Verschlußzeit" (Belichtungszeit) einer angeschlossenen CCD-Kamera.

1-5-4. Interne Leiterplatten



Jede Leiterplatte besitzt die folgenden Bedienungselemente.
Genaueres hierzu siehe Teil 2ff.

AT-Leiterplatte 1

TRIAX TEST-Schalter*	Zur Ein- und Ausschaltung des TRIAX TEST-Signals.
GRP No.-Wähler	Zur Wahl der Gruppennummer bei Verwendung der Master-Setup-Einheit.
CCU No.-Wähler	Zur Wahl der Kameranummer für die Master-Setup-Einheit.
PHASE-Schalter	Zur Umschaltung des H/SC-Phasenreglers auf Fernbedienungs- order Direktbetrieb. REMOTE: Zur Phaseneinstellung an der Fernbedienung. LOCAL: Zur Phaseneinstellung am H/SC-Phasenregler der AT-Leiterplatte.
H/SC PHASE-Regler	Mit dem H PHASE-Regler wird die Horizontalsynchronphase des Ausgangssignals im Bezug auf das der GEN LOCK INPUT-Buchse zugeleitete Signal und mit dem SC PHASE-Regler die Farbträgerphase eingestellt.
SC STEP-Schalter	Zur Verschiebung der Farbträgerphase um 90° .

SG board 2

SC FREQ control	Adjusts the subcarrier frequency.
H PHASE control	Adjusts the horizontal sync phase of the output signal. This control is used for fine.
CHU LOCK indicator	Lights up when the connected camera is turned on.
EXT LOCK indicator	Lights up when the externally supplied sync signal is being used.

EN board 3

U/V BAL controls (Only for the CCU-355P)	Adjust the balance of the U and V signals.
LEVEL controls	Adjust the level of the chroma, luminance and sync signals.

AU board 5

SIDE TONE control	Adjusts the level of the side tone of the intercom.
CANCEL control	Adjusts to minimize the level of your own voice which returns to the CCU-355P through the intercom when an RTS or 2-wire type intercom is used.

TR board 6

TONE indicator	Lights up when the camera is connected to this unit correctly.

DM board 7

Y LEVEL control	Adjusts the level of the luminance signal sent from the camera.
R-Y LEVEL control	Adjusts the level of the R-Y signal sent from the camera.
B-Y LEVEL control	Adjusts the level of the B-Y signal sent from the camera.

* When the TRIAX TEST switch is set to ON and the R switch, G switch or B switch of the camera adaptor (on the MD-54 board in the CA-3511P or the CA-55P) is set to OFF, "CCU VA NG", which means that a malfunction has occurred on the VA board, will appear on the front panel of the MSU-350 or the BKP-3601. However, actually, there is no malfunction.

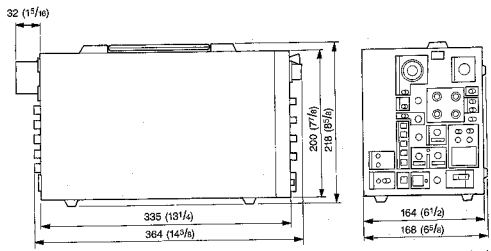
1-6. Specifications

Power requirements	100V AC ± 10% to 240V AC ± 10% 50/60 Hz
Power consumption	120W (MAX)
Output signals	VIDEO OUT 1.0 Vp-p, VBS, 75 ohms (BNC type) 1.0 Vp-p, VBS/VB selectable, 75 ohms (BNC type) R, G, B OUT (BNC type × 3) 0.7 Vp-p, V/VS selectable, 75 ohms Y OUT (BNC type) 1.0 Vp-p, VS/V selectable, 75 ohms R-Y, B-Y OUT (BNC type × 2) 0.525 Vp-p, 75 ohms MONITOR OUT (BNC type) R, G, B, -G signals or encoder output signal 1.0 Vp-p, VS/VBS, 75 ohms WAVEFORM OUT ENCODER OUT: 1.0 Vp-p, VBS, high impedance R OUT: 0.7 Vp-p, V, 75 ohms G OUT: 0.7 Vp-p, V, 75 ohms B OUT: 0.7 Vp-p, V, 75 ohms SYNC OUT: 0.3 Vp-p, 75 ohms MIC OUT (XLR 3-pin, male) 0 dBs/ − 20 dBs (selectable) output impedance 600 ohms
Control items	Camera power (ON/OFF) Iris (auto/manual) White balance (auto/manual) Black balance (auto/manual) White (R/B) Black (master/R/B) Centering (R/B-horizontal, R/B-vertical) Gain select (0 dB/ + 6 dB/ + 9 dB/ + 18 dB) Mode select (camera/bars/test) Incom select (common/private) Detail (ON/OFF) Phase (H/SC) Tally call
Gen-lock	Horizontal phase adjustable range: + 3 μsec to − 1.5 μsec or more (with respect to input phase) SC phase adjustment range: 360° Coupling accuracy: H: Within ± 0.01 μsec SC: Within ± 1°
Iris adjustment	Close←→open, auto/manual selectable (At the auto position, fine adjustment is possible)

The output level of a component signal conforms to the EBU "N-10" standard.

Master BLACK adjustment	More than ±30% of rating
R/B WHITE adjustment	More than ±20% of rating
R/B BLACK adjustment	More than ±10% of rating
Centering adjustment	More than ±1% of rating
Tally/call	Contact and power supply (DC 12V/24V)
Intercom	4-wire INPUT: 0 dBs, balanced OUTPUT: 0 dBs, balanced 2 line INPUT: 0 dBs 600 ohms, balanced OUTPUT: 0 dBs 600 ohms, balanced RTS INPUT/OUTPUT: −10 dBs 200 ohms, unbalanced
Program audio in	0/−20 dBs, balanced
Ambient operating temperature	−10°C to +40°C
Dimensions	218 (W) × 168 (H) × 364 (D) mm (8⅝ × 6⅝ × 14⅜ inches) including projecting parts
Weight	8.5 kg (18 lb 12 oz)
Supplied accessories	Power cord (1) Extension board (1) Camera number plate (1) Operation and maintenance mamual (1)
Optional accessories	Rack mount metal (RMM-301) Camera adaptor CA-3511P, CA-55P Remote control panel RCP-3711/3721/3731 Master setup unit MSU-350

Dimensions



Unit: mm (inches)

Design and specifications are subject to change without notice.

TEIL 1 BETRIEB

1-1. Besondere Merkmale

Die Kamera-Steuereinheit CCU-355P ist für portable Sony Farb-Videokameras bestimmt. Vielfältige Fernbedienungs- und Einstell-Funktionen ermöglichen sowohl einen Einsatz im Freien als auch im Studio.
Zur Ein- und Ausgabe der Signale und zur Stromversorgung ist das Gerät mit Triaxbuchsen ausgestattet. Nur Kameras mit Triaxbuchsen können über entsprechende Kabel angeschlossen werden.

Kompakt und leicht
Dank der kompakten Auslegung ist die Steuereinheit bequem zu handhaben. Die Bedienungselemente für alle erforderlichen Einstellfunktionen sind in einem einzigen Gehäuse untergebracht.

Kabel bis auf 1800 m verlängerbar
Das Triaxkabel kann bis auf 900 Meter* oder 1800 Meter** verlängert werden.
* Bei Verwendung von Triaxkabeln der Fujikura Cable Works, Ltd. mit 8,5 mm Durchmesser.
** Bei Verwendung von Triaxkabeln der Fujikura Cable Works, Ltd. mit 14,5 mm Durchmesser.

Genlock-Funktion
Neben dem intern erzeugten Synchronsignal kann auch ein externes Synchronsignal verwendet werden. Beim Genlock-Betrieb ermöglicht das Gerät eine Anpassung der Horizontalsynchronphase an die Hilfsträgerphase des externen Signals.

Vielfältige Ausgangssignale
Folgende Ausgangssignale stehen zur Verfügung: FBAS, FBA, R/G/B-Signal für Chroma-Key-Betrieb, PIX-Signal, WF-Signal und Luminanz-/Farbdifferenzsignale (Y/R-Y/B-Y).

Einrichtungen für sicheren Betrieb
Das Netzkabel ist mit Lederband fixiert, so daß es nicht versehentlich herausgezogen werden kann. Darüber hinaus können die Bedienungselemente durch Drücken der PANEL ACTIVE-Taste gesperrt werden, um versehentliche Verstellungen zu vermeiden.

Wartungsfreundliche Auslegung
Das vordere Bedienungspult läßt sich mit einem Finger leicht öffnen, so daß das Gerät für Kontroll- und Wartungsarbeiten nicht unbedingt aus dem Gestell herausgenommen werden muß.

1-2. Zur besonderen Beachtung

Zur Installation

Installationsplatz

- Installieren Sie das Gerät an einem trockenen Platz, an dem gute Luftzirkulation gewährleistet ist.
- In der Nähe von Wärmequellen und in sehr warmen Räumen darf das Gerät nicht installiert werden.
- Setzen Sie das Gerät keinem Staub und keinen starken Vibrationen aus.
- Halten Sie das Gerät von magnetischen Feldern fern.
- Schützen Sie das Gerät vor prallem Sonnenlicht sowie vor elektrischen Lichtquellen und Lichtblitzen.

Gestellmontage

Unter Verwendung des getrennt lieferbaren Gestellmontageteils RMM-301 können zwei Geräte nebeneinander in ein EIA-Normgestell eingebaut werden. Beim Einbau muß darauf geachtet werden, daß sich das Gerät nicht über dem Netzteil oder anderen Wärme-erzeugenden Geräten befindet.

Zum Betrieb

Anbringung und Abtrennung von Kabeln

Das Triax-Kamerakabel darf nur bei ausgeschalteter CCU-355P eingesteckt und abgetrennt werden.

Deaktivierte Bedienungselemente der Kamera

Wenn die CCU-355P an die Kamera angeschlossen ist, können einige Bedienungselemente der Kamera nicht von der CCU-355P aus gesteuert werden. Genaueres dazu kann der Bedienungsanleitung der Kamera oder des Kameraadapters entnommen werden.

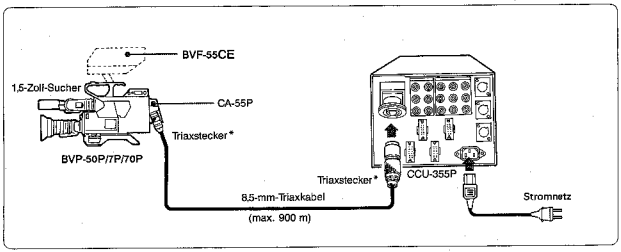
Anschluß an ein RCP-Fernsteuerpult oder an die MSU-Master-Setup-Einheit

Wenn ein Fernsteuerpult oder die Master-Setup-Einheit MSU-350 an die CCU-355P angeschlossen wird, überprüfen Sie zunächst, ob die Anzeigen des Pultes nach dem Einschalten des POWER-Schalters normal arbeiten, und drücken Sie danach die PANEL ACTIVE-Taste.

1-3. Anschluß der Kamera

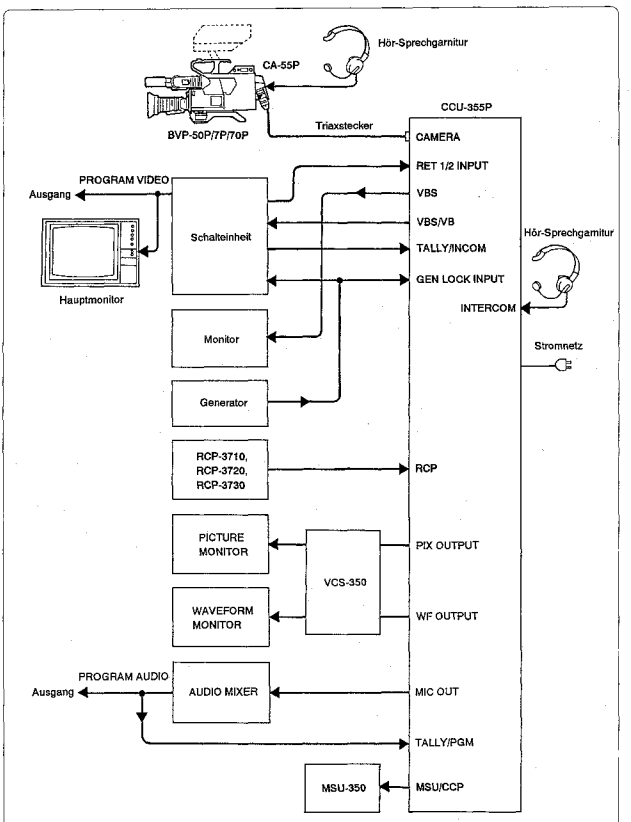
Anschluß der BVP-50P/7P/70P

An der BVP-50P/7P/70P muß der Adapter CA-55P angebracht werden.



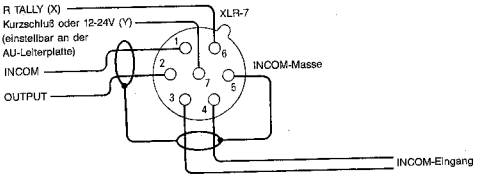
* Verwenden Sie Triaxstecker der Firma FISCHER.

1-4. Systemanschluß

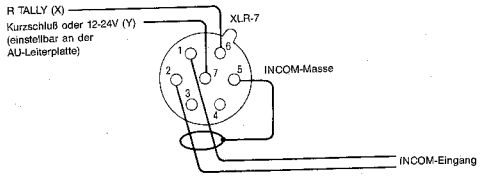


Belegung der R TALLY/INCOM-Buchse

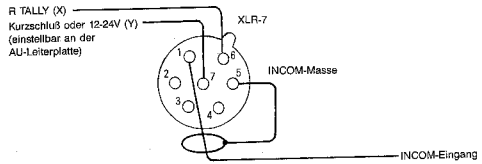
- **4-Leiter-System**



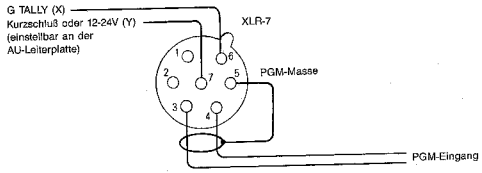
- **2-Leiter-System**



- **RTS**



Belegung der G TALLY/PGM-Buchse

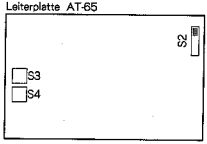


Einige Anschlußkonfigurationen erfordern Schaltereinstellungen an den Leiterplatten der MSU und CCU-355P. Genaueres dazu finden Sie in den Anleitungen der betreffenden Geräte.

MSU-350/370
Wenn nur an einer der CCU-Buchsen der MSU eine Kamera-Steuereinheit CCU-355P angeschlossen ist, muß der Abschlußwiderstand mit dem Schalter der MSU eingeschaltet werden.
(Genaures entnehmen Sie der Bedienungsanleitung des MSU.)

CCU-355P
Bei Anschluß der CCU-355P an die MSU sind die Schalter S2, S3, S4 und S6 an der Leiterplatte AT-65 in der CCU-355P wie folgt einzustellen.

Leiterplatte AT-65



Systembetriebsartenschalter (S2 (SYSTEM MODE))
Wenn die CCU an ein MSU-350/370-System order an RCP-3730 angeschlossen ist, ist dieser Schalter in die Position 350 zu stellen.
(Ist die CCU an ein MSU-360-System angeschlossen, ist der Schalter in die Position 360 zu stellen.)

Gruppenwahlschalter (S3 (GROUP SELECT))
Wenn der an die PIX/WF OUTPUT-Signale der CCU angeschlossene VCS-350 in den Sub-Betrieb (Erweiterungsbetrieb) geschaltet ist, stellen Sie den Schalter entsprechend der PIX/WFM-Anschlußnummer des VCS (Hauptbetrieb) ein und leiten Sie die WFM/PIX OUTPUT-Signale des VCS (Sub-Betrieb) zu.

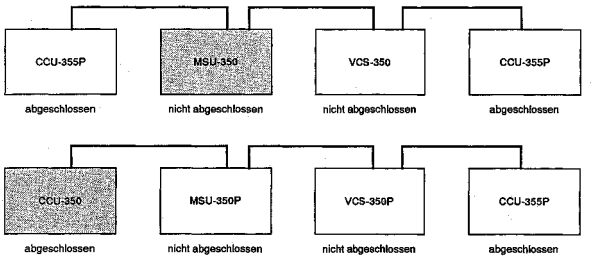
PIX/WFM-Buchse	Schalterstellung
8 (für MSU-350/370)	1
7	2
6 (für MSU-370)	3
5	4

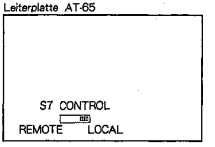
- Normalerweise, ist der Schalter auf 0 zu stellen.

Kamerawahlschalter (S4)
Dieser Schalter ist entsprechend der Buchse (MONITOR IN 1 bis 8) des VCS-350/370, an die die CCU-355P angeschlossen ist, einzustellen.

Abschlußschalter (S6)
Wenn mehrere Steuereinheiten CCU-355P in Reihe geschalter sind, ist dieser Schalter auf OFF (kein Abschluß) zu stellen.
Wenn nur eine CCU-355P verwendet wird order wenn es sich um das letzte Glied der Reihe handelt, ist dieser Schalter auf ON (abgeschlossen) zu stellen.

Anschlußbeispiel





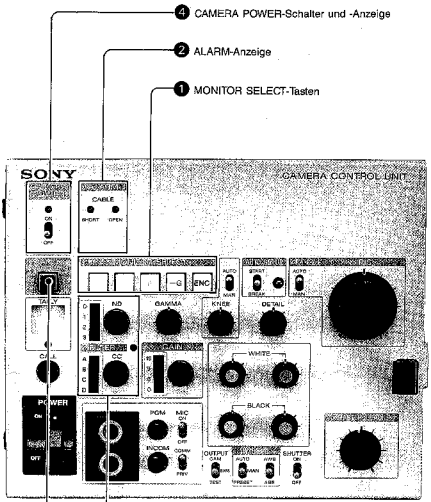
Steuerschalter (S7 (CONTROL))
Bei Fernbedienungsbetrieb (z.B. von MSU order RCP aus) ist dieser Schalter auf REMOTE zu stellen.

In diesem Fall können die Bedienungselemente an der CCU-355P nicht verwendet werden und die Filteranzeigen, die GAIN-Anzeige sowie die MONITOR SELECT-Tasten an der CCU-355P betreffen die am kamerakopf vorgenommenen Einstellungen.

Wenn das vordere Bedienungspult der CCU verwendet wird, ist dieser Schalter auf LOCAL zu stellen.

1-5. Lage und Funktion der Bedienungselemente

1-5-1. Vorderseite



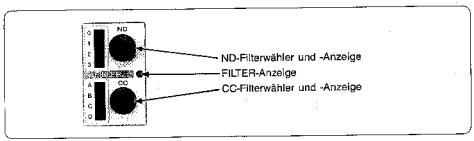
1 MONITOR SELECT-Tasten
Mit diesen fünf Tasten werden die zum Bildmonitor gelangenden Signale (R, G, B, –G oder ENC) gewählt.

R, G, B, -G: Durch Drücken einer oder mehrerer Tasten kann das FBAS-Signal zusammengesetzt werden; z.B.: R und –G → R–G-Signal. (Die Erzeugung eines Wenn der Schalter S2 (SYSTEM MODE) auf der AT-Leiterplatte in der Position 350 steht, kann die -G-Taste nicht verwendet werden. G–G-Signals ist nicht möglich.)

ENC: Zur Erzeugung eines codierten Ausgangssignals.

❷ ALARM-Anzeige
Leuchtet bei einer Störung im Triaxkabel.
SHORT: Zeigt an, daß im Triaxkabel ein zu hoher Strom fließt, bzw. daß ein Kurzschluß im Gerät vorliegt.
OPEN: Zeigt an, daß das Triaxkabel offen ist, bzw. daß keine Kamera an der CAMERA-Buchse (Geräterückseite) angeschlossen ist.

❸ FILTER-Wähler und -Anzeigen

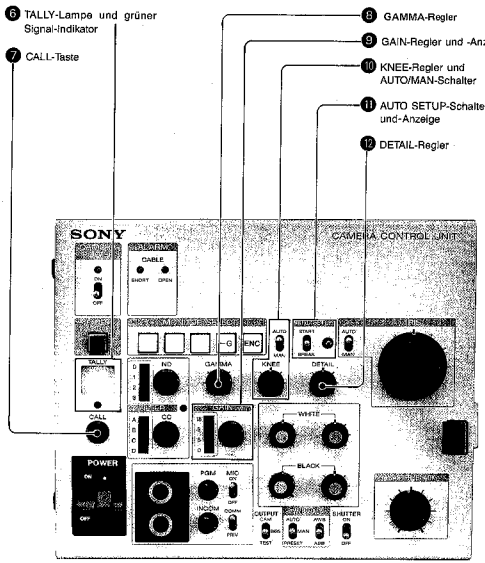


Wenn die FILTER-Anzeige leuchtet, können die CC- und ND-Filter an den CC- und ND-Wählern gewählt werden. Die Wahl wird durch Aufleuchten der betreffenden Anzeige bestätigt.

Wenn die FILTER-Anzeige erloschen ist, arbeiten die Wähler nicht, Die Filter-Anzeigen leuchten auf, so daß erkannt werden kann, welches Filter momentan an der Kamera verwendet wird.
- Wenn die angeschlossene Kamera keine Filter-Anzeigefunktion besitzt, bleibt die FILTER-Anzeige an der CCU-355P erloschen und die CC/ND FILTER-Wähler arbeiten nicht.

❹ CAMERA POWER-Schalter und -Anzeige
Ist der Kamerakopf an diesem Gerät angeschlossen, so wird die Stromzufuhr zum Kamerakopf mit diesem Schalter ein- und ausgeschaltet. Bei auf ON gestelltem Schalter leuchtet die Anzeige.

❺ PANEL ACTIVE-Taste
Wenn das Bedienungspult der CCU-355P betriebsbereit ist, leuchtet diese Taste auf. Bei erloschener Taste sind alle Bedienungselemente außer den MONITOR SELECT-Tasten deaktiviert.
- Wenn der Schalter S7 (CONTROL) auf der AT-Leiterplatte auf REMOTE steht und die ACTIVE-Taste gedrückt ist, leuchtet die Taste nicht auf.
  Es können dann keine Steuerfunktion der CCU verwendet werden.


6 TALLY-Lampe und grüner Signal-Indikator
7 CALL-Taste
8 GAMMA-Regler
9 GAIN-Regler und -Anzeige
10 KNEE-Regler und AUTO/MAN-Schalter
11 AUTO SETUP-Schalter und-Anzeige
12 DETAIL-Regler
SONY
CAMERA CONTROL UNIT
CABLE
SHORT
OPEN
ENC
AUTO
START
MAN
AUTO
MAN
NO
GAMMA
KNEE
DETAIL
CALL
CC
WHITE
BLACK
POWER
ON
OFF
PGM
A/C
INCOM
DOWN
PREV
OUTPUT
SWITCHER
TEST
PRESET
ON
OFF

⑥ TALLY-Lampe und grüner Signal-Indikator

TALLY-Lampe
Leuchten dieser Lampe signalisiert, daß das Kamerabild momentan auf den Sender geschaltet oder mit dem Haupt-Videorecorder aufgezeichnet wird. Die Lampe leuchtet ebenfalls, wenn die CALL-Taste ⑦ gedrückt wird. (Wenn die CALL-Taste bei leuchtender TALLY-Lampe gedrückt wird, erlischt die Lampe.)
Die Lampe kann mit dem mitgelieferten Kamera-Nummernschild versehen werden.

Grüner Signal-Indikator
Der grüne Signal-Indikator leuchtet auf, wenn das Kamerabild mit einem Zusatz-Videorecorder aufgezeichnet wird.

⑦ CALL-Taste
Beim Drücken der CALL-Taste leuchtet sowohl die Signallampe im Sucher der Kamera als auch die Signallampe an der CCU-355P auf.

⑧ GAMMA-Regler
Zur Einstellung des Master-Gammawertes.

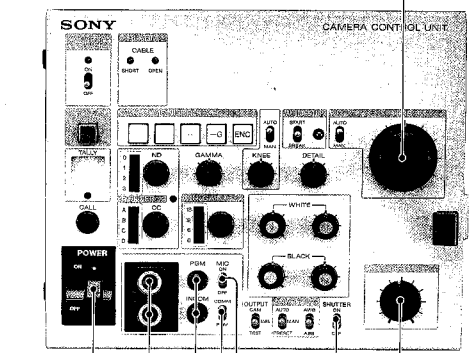
⑨ GAIN-Regler und -Anzeige
An diesem Regler kann der Videopegel in vier Stufen angehoben werden (0 dB, +6 dB, +9 dB und +18 dB). Die Einstellung wird durch Aufleuchten der betreffenden Anzeige bestätigt.

⑩ KNEE-Regler und AUTO/MAN-Schalter
Steht der Schalter auf AUTO, wird bei zu intensiver Beleuchtung der Kniepunkt automatisch geändert. In der Stellung MAN kann der Kniepunkt dagegen am KNEE-Regler manuell einjustiert werden.

⑪ AUTO SETUP-Schalter und -Anzeige
Zum Aktivieren der automatischen Setup-Funktion der Kamera ist dieser Schalter auf START zu stellen. Die Anzeige beginnt dann zu blinken, und einige Sekunden nach dem Ende der Setup-Einstellung erlischt die grüne Anzeige. Durch Drücken des Schalters auf BREAK kann der Einstellvorgang vorzeitig abgebrochen werden.

- Auch bei Einleitung des automatischen Weiß- oder Schwarzabgleiches beginnt die Anzeige zu blinken. Wenn der Abgleich erfolgreich beendet wurde, leuchtet die Anzeige grün auf; wenn der Abgleich nicht einwandfrei ausgeführt wurde, blinkt die Anzeige dagegen rot.

⑫ DETAIL-Regler
Zur Einstellung des Kontur-Korrektur-Pegels.



⑬ IRIS-Regler und AUTO/MAN-Schalter

⑭ POWER-Schalter

⑮ PGM/INCOM-Buchsen

⑯ PGM/INCOM-Pegelregler

⑰ COMM/PRIV-Wähler

⑱ MIC-Schalter

⑲ MASTER BLACK-Regler

⑳ SHUTTER-Schalter

⑬ IRIS-Regler und AUTO/MAN-Schalter
In der Stellung AUTO arbeitet die Blendenautomatik des Kameraobjektivs. In der Stellung MAN kann die Blende dagegen am IRIS-Regler einjustiert werden.
- Auch in der Stellung AUTO kann der automatisch eingestellte Blendenwert am IRIS-Regler noch um 1/2 Blendenwert variiert werden.
- Wenn der IRIS-Schalter der Kamera-Objektiveinheit auf manuellen Betrieb steht, bleiben dieser Schalter und dieser Regler funktionslos.

⑭ POWER-Schalter
Zum Ein- und Ausschalten der CCU-355P.

⑮ PGM/INCOM-Buchsen
Diese Buchsen dienen zum Anschluß einer Hör-Sprechgarnitur mit Doppelstecker. Der oberen Buchse wird das Programmsignal und der unteren das Sprechverkehrsignal zugeleitet. Die Ausgabe des Sprechverkehrsignals erfolgt sowohl über die obere als auch über die untere Buchse.

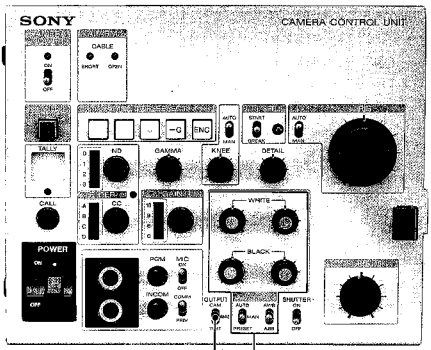
⑯ PGM/INCOM-Pegelregler
Zur Einjustierung des Programmquellenpegels und des von der Hör-Sprechgarnitur kommenden Sprechverkehr-Signalpegels.

⑰ COMM/PRIV-Wähler
Ermöglicht die Zu- und Abschaltung eines externen Sprechverkehrkreises zum „privaten" Kamera-Steuereinheit-Sprechverkehrkreis.
COMM: Es ist sowohl ein Sprechverkehr mit externen Einheiten (z.B. Steuerkonsole) als auch ein Sprechverkehr zwischen der Kamera und der CCU-355P möglich. In dieser Position kann zwischen drei Komponenten (z.B. externes System, Kamera und CCU-355P) kommuniziert werden.
PRIV: Das externe Sprechverkehrsystem ist abgeschaltet, und es kann lediglich zwischen Kamera und CCU-355P kommuniziert werden.

⑱ MIC-Schalter
Zum Ein- und Ausschalten des Sprechverkehr-Mikrofons.

⑲ MASTER BLACK-Regler
Zur Einjustierung des Haupt-Schwarzpegels der Kamera.

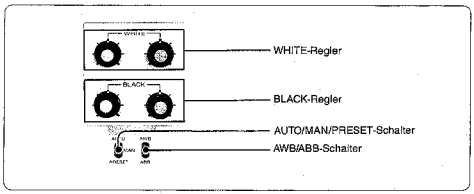
⑳ SHUTTER-Schalter
Zur Ein- und Ausschaltung des elektronischen „Verschlusses" einer CCD-Kamera.
- Die Verschlußzeit (d.h. die Belichtungszeit des CCD-Wandlers) kann am SHUTTER SPEED-Wähler hinter der Frontplatte eingestellt werden. Genaueres hierzu siehe Bedienungsanleitung der Kamera.



21 W/B BAL-Regler und -Schalter

22 OUTPUT-Wähler

㉑ W/B BAL-Regler und -Schalter



WHITE/BLACK-Regler
Wenn der AUTO/MAN/PRESET-Schalter auf MAN oder AUTO steht, kann der Weißabgleich mit den WHITE-Reglern eingestellt werden. Der Schwarzabgleich mit den BLACK-Reglern ist unabhängig von der Schalterposition jederzeit möglich. Der linke Regler dient zur Einstellung des Rot- und der rechte Regler zur Einstellung des Blau-Pegels.

- Wenn der Weiß- oder Schwarzabgleich automatisch ausgeführt wurde, kann der Einstellwert nachträglich noch mit den Reglern variiert werden. Durch Drehen nach rechts wird der Pegel erhöht und durch Drehen nach links erniedrigt.
- Die BLACK-Regler dienen ebenfalls zur Flare-Einstellung, wenn der S-4-Schalter an der IF-177-Leiterplatte auf ON steht. Genaueres hierzu siehe Teil 2ff.

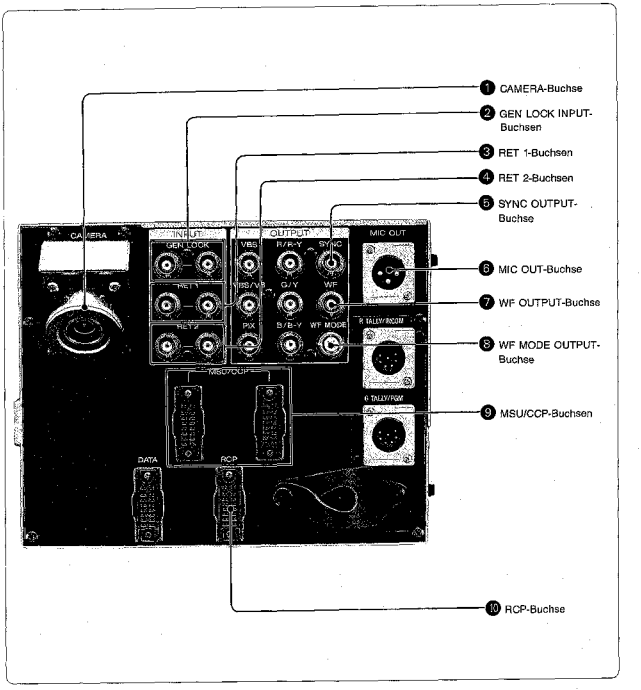
AUTO/MAN/PRESET-Schalter
Zur Wahl des Einstellmodus des Weiß- und Schwarzabgleiches.
AUTO: Für automatische Einstellung.
MAN: Für manuelle Einstellung an den Reglern.
PRESET: Für werksseitig voreingestellten Weißabgleich (der Schwarzabgleich kann mit den Reglern eingestellt werden).

AWB/ABB-Schalter
Wenn der AUTO/MAN/PRESET-Schalter auf AUTO steht, kann durch Hochschieben dieses Schalters in die Position AWB ein automatischer Weißabgleich und durch Schieben nach unten in Richtung ABB ein automatischer Schwarzabgleich eingeleitet werden.

- Während des automatischen Weiß- bzw. Schwarzabgleiches blinkt die AUTO SETUP-Anzeige ⑪. Am Ende des Abgleiches leuchtet die Anzeige grün auf. Wenn der automatische Abgleich vorzeitig abgebrochen wird oder aus bestimmten Gründen nicht möglich ist, blinkt die Anzeige rot.

㉒ OUTPUT-Wähler
Wählen Sie die Ausgangssignale der Buchsen WF OUTPUT ⑦, VBS/VB OUTPUT ⑫, VBS OUTPUT ⑬ und PIX OUTPUT ⑭. Wenn die ENC-Taste (an den MONITOR SELECT-Tasten) nicht gedrückt ist, werden selbst in der Position BARS die Kamerasignale von den Buchsen ⑦ und ⑭ ausgegeben.
CAM: Für Kamerasignal.
BARS: Für das von der CCU-355P erzeugte Farbbalken-Signal.
TEST: Für Kamera-Testsignal.

1-5-2. Rückseite



❶ **CAMERA-Buchse** (Triax-Typ).
Zum Anschluß der Kamera über ein Triaxkabel (Sonderzubehör).

❷ **GEN LOCK INPUT-Buchsen** (BNC-Typ)
Diesen Buchsen kann zur externen Synchronisierung ein Schwarzburstsignal (oder FBAS-Signal) zugeleitet werden. Wird kein externes Referenzsignal zugeleitet, so wird die Kamera mit dem intern erzeugten Signal synchronisiert.

❸ ❹**RET 1/2 INPUT-Buchsen** (BNC-Typ)
Diesen Buchsen werden die von zwei verschiedenen Geräten zurückgeleiteten Videosignale zugeleitet. Zur Überwachung dieser Signale mit der Kamera kann entweder das RET 1- oder RET 2-Signal gewählt werden.

Die Buchsen ❷, ❸ und ❹ sind durchgeschleift. Wenn nur eine der beiden Buchsen verwendet wird, muß die jeweils andere mit 75 Ohm abgeschlossen werden.

❺ **SYNC OUTPUT-Buchse** (BNC-Typ)
Diese Buchse gibt das intern erzeugte Synchronsignal (0,3 Vss, 75 Ohm) ab und kann an den Synchronsignaleingang eines Waveform-Monitors angeschlossen werden.

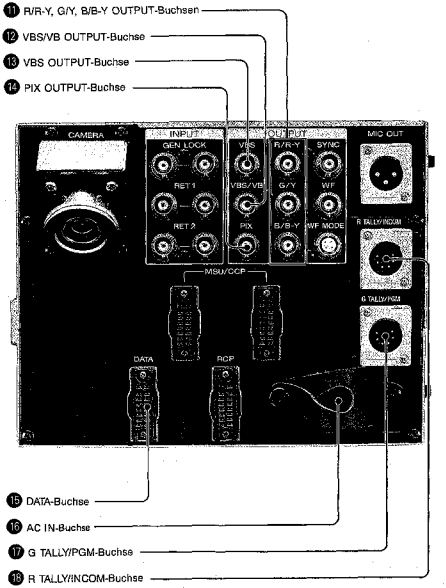
❻ **MIC OUT-Buchse** (XLR, 3pol)
Diese Buchse gibt das vom Mikrofon der Kamera aufgenommene und anschließend verstärkte Signal aus. Der Ausgangspegel kann am MIC-Schalter auf einer internen Leiterplatte der CCU-355P eingestellt werden.

❼ **WF OUTPUT-Buchse** (BNC-Typ)
Diese Buchse gibt das Videosignal für einen Waveform-Monitor ab. Die Anwahl erfolgt mit den WAVEFORM MONITOR SELECT-Tasten des Kamera-Steuerpultes BKP-3601 bzw. von den Bedienungselementen der anderen angeschlossenen Steuereinheiten.

❽ **WF MODE OUTPUT-Buchse** (4pol)
Zur sequentiellen Überprüfung der Signale kann hier ein Tektronix-Waveform-Monitor angeschlossen werden. Bei gedrückter SEQ-Taste am Kamera-Steuerpult BKP-3601 usw. wird über diese Buchse ein Treppensignal ausgegeben und die R-, G- und B-Singale können sequentiell überprüft werden.

❾ **MSU/CCP-Buchsen** (16pol)
An diesen Buchsen kann über das Verbindungskabel CCA-2A die Master-Setup-Einheit MSU-350 (Sonderzubehör) oder über das Verbindungskabel CCA-1 das Kamera-Steuerpult BKP-3601 (Sonderzubehör) angeschlossen werden. Die Buchse liefert ebenfalls die Stromversorgung für das BKP-3601.
- Die Buchsen sind durchgeschleift und können in einer Brückenschaltung verwendet werden. Wenn die MSU-350 an einer der Buchsen angeschlossen ist, können bei einer Brückenschaltung mehrere CCU-355P gleichzeitig verwendet werden.

❿ **RCP-Buchse** (16pol)
An dieser Buchse kann über das Verbindungskabel CCA-2 ein Fernsteuerpult der RCP-3711/3721/3731-Serie angeschlossen werden. Die Buchse überträgt sowohl die Steuersignale als auch die Stromversorgung.


11 R/R-Y, G/Y, B/B-Y OUTPUT-Buchsen
12 VBS/VB OUTPUT-Buchse
13 VBS OUTPUT-Buchse
14 PIX OUTPUT-Buchse
CAMERA
INPUT
GEN LOCK
RET 1
RET 2
OUTPUT
VBS
VBS/VB
PIX
R/R-Y
G/Y
B/B-Y
SYNC
WF
WF MODE
MIC OUT
R TALLY/INCOM
G TALLY/PGM
MSU/CCP
DATA
RCP
15 DATA-Buchse
16 AC IN-Buchse
17 G TALLY/PGM-Buchse
18 R TALLY/INCOM-Buchse

⓫ **R/R-Y, G/Y, B/B-Y OUTPUT-Buchsen** (BNC-Typ)
Je nach der Einstellung des Schalters an der EN-Leiterplatte geben diese Buchsen die Signale R oder R-Y, G oder Y, B oder B-Y ab.

⓬ **VBS/VB OUTPUT-Buchse** (BNC-Typ)
Diese Buchse gibt das von der Kamera aufgenommene FBAS-Videosignal ab. An einem Schalter an der EN-Leiterplatte kann das Signal zu einem FBA-Signal geändert werden.

⓭ **VBS OUTPUT-Buchse** (BNC-Typ)
Diese Buchse gibt das von der Kamera aufgenommene FBAS-Signal ab.

⓮ **PIX OUTPUT-Buchse** (BNC-Typ)
Diese Buchse gibt das Videosignal für einen Bildmonitor ab. Die Anwahl erfolgt mit den MONITOR SELECT-Tasten an der Vorderseite oder an dem Kamera-Steuerpult BKP-3601 usw.

⓯ **DATA-Buchse**
Nicht verwendet.

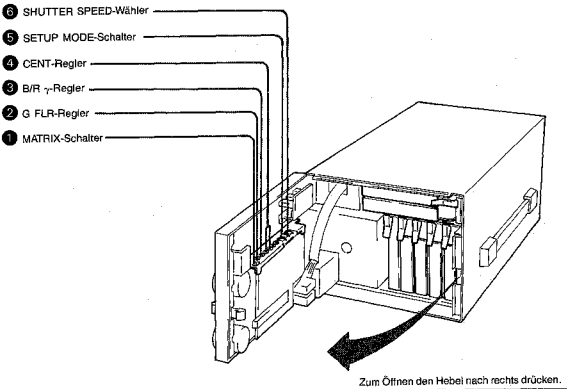
⓰ **AC IN-Buchse**
Zum Anschluß des mitgelieferten Netzkabels. Um sicheren Anschluß zu gewährleisten, ist der Stecker mit dem Lederband zu befestigen.

⓱ **G TALLY/PGM-Buchse** (XLR, 7pol)
Diese Buchse dient zur Zuleitung und zur Abnahme des Signals der grünen Signallampe und des Programm-Tonsignals und wird an eine Steuerkonsole oder an ein anderes Steuegerät angeschlossen.

⓲ **R TALLY/INCOM-Buchse** (XLR, 7pol)
Diese Buchse dient zur Zuleitung und zur Abnahme des Signals der roten Signallampe und des Sprechverkehrs und wird an eine Steuerkonsole oder an ein anderes Steuergerät angeschlossen.

1-5-3. Bedienungselemente hinter der Frontplatte

Genaueres zu den Bedienungselementen siehe Teil 2ff.



Zum Öffnen den Hebel nach rechts drücken.

❶ **MATRIX switch**
Turns the linear matrix circuit of the connected camera off and on. (This switch can be used only when the camera itself has a switch to turn the circuit off and on.)

❷ **G FLR (G flare) control**
Adjusts the G flare. (To utilize this control, set the S-4 switch on the IF-177 board to ON. When the switch is set to OFF, the G FLR control cannot be used.)
- When the S-4 switch on the IF-177 is set to ON, the R and B flare can be adjusted with the BLACK controls on the front panel.

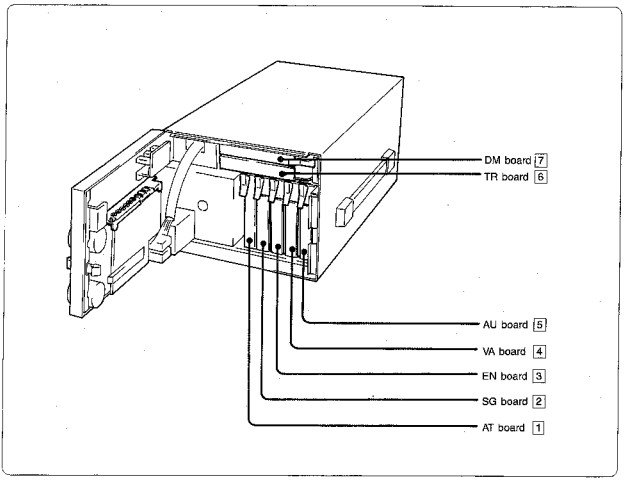
❸ **B/R γ (B/R gamma) controls**
Adjust the gamma of the B signal with the left control and the gamma of the R signal with the right control.

❹ **CENT (centering) controls**
Horizontal registration is adjusted with the left control and vertical registration with the right control. To adjust the R signal, select R-G with the MONITOR SELECT buttons on the front panel, and to adjust the B signal, select B-G. (When another is selected, the CENT controls cannot be used.)
- These controls do not work when a CCD camera is connected to the unit.

❺ **SETUP MODE selector**
Selects the automatic setup mode.

❻ **SHUTTER SPEED selector**
Select the shutter speed for the electronic shutter of the connected CCD camera.

1-5-4. Built-in Printed Circuit Boards



Each board has the following switches and controls.
For details, refer to SECTION 2 and later.

AT board 1

TRIAX TEST switch*	Turns on and off the TRIAX TEST signal.
GRP No. selector	Selects the group number for using the master setup unit.
CCU No. selector	Selects the camera number for using the master setup unit.
PHASE switch	Select remote or local operation of the H/SC phase control. REMOTE: Control the phase using remote control panel. LOCAL: Control the phase using the H/SC phase control on the AT circuit board.
H/SC (H sync/subcarrier) PHASE controls	With the H PHASE control, adjust the horizontal sync phase of the output signal with respect to the signal fed to the GEN LOCK INPUT connector, and with SC PHASE control, adjust the subcarrier phase.
SC (subcarrier)STEP switch	Shifts the subcarrier phase by 90°

SG-Leiterplatte 2

SC FREQ-Regler	Zur Einstellung der Hilfsträgerfrequenz.
H PHASE-Regler	Zur Feineinstellung der horizontalen Synchronphase des Ausgangssignals.
CHU LOCK-Anzeige	Leuchtet auf, wenn die angeschlossene Kamera eingeschaltet ist.
EXT LOCK-Anzeige	Leuchtet auf, wenn das externe Synchronsignal verwendet wird.

EN-Leiterplatte 3

U/V BAL-Regler (nur an CCU-355P)	Zur Balance-Einstellung der U- und V-Signale.
LEVEL-Regler	Zur Pegeleinstellung der Chroma-, Luminanz- und Synchronsignale.

AU-Leiterplatte 5

SIDE TONE-Regler	Zur Pegeleinstellung des Sprechverkehr-Mithörtons.
CANCEL-Regler	Zur minimalen Einstellung des Pegels der eigenen Stimme, die zur CCU-355P über das Sprechverkehrsystem zurückgeleitet wird, wenn ein RTS- oder 2-Kabel-Sprechverkehrsystem verwendet wird.

TR-Leiterplatte 6

TONE-Anzeige	Leuchtet auf, wenn die Kamera richtig an dieser Einheit angeschlossen ist.

DM-Leiterplatte 7

Y LEVEL-Regler	Zur Pegeleinstellung des von der Kamera zugeleiteten Luminanzsignals.
R-Y LEVEL-Regler	Zur Pegeleinstellung des von der Kamera zugeleiteten R-Y-Signals.
B-Y LEVEL-Regler	Zur Pegeleinstellung des von der Kamera zugeleiteten B-Y-Signals.

* Wenn der TRIAX TEST-Schalter auf ON und der R-, G-, oder B-Schalter am Kameraadapter (auf der Leiterplatte MD-54 im CA-3511P oder CA-55P) auf OFF steht, erscheint zwar die Anzeige CCU VA NG (Fehlfunktion der VA-Leiterplatte) an der Vorderseite der MSU-350 oder der BKP-3601, es ist jedoch keine Fehlfunktion vorhanden.

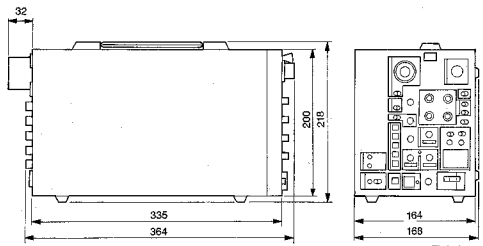
1-6. Technische Daten

Stromversorgung	100 V — 240 V Wechselspannung ± 10%, 50/60 Hz
Leistungsaufnahme	120 W (max.)
Ausgänge	VIDEO OUT 1,0 Vss, FBAS, 75 Ohm (BNC-Typ) 1,0 Vss, FBAS/FBA wählbar, 75 Ohm (BNC-Typ) R, G, B OUT (BNC-Typ × 3) 0,7 Vss, V/VS wählbar, 75 Ohm Y OUT (BNC-Typ) 1,0 Vss, VS/V wählbar, 75 Ohm R-Y, B-Y OUT (BNC-Typ × 2) 0,525 Vss, 75 Ohm MONITOR OUT (BNC-Typ) R-, G-, B-, −G-Signal oder kodiertes Ausgangssignal 1,0 Vss, FAS/FBAS, 75 Ohm WAVEFORM OUT ENCODER OUT: 1,0 Vss, FBAS, hohe Impedanz R OUT: 0,7 Vss, V, 75 Ohm G OUT: 0,7 Vss, V, 75 Ohm B OUT: 0,7 Vss, V, 75 Ohm SYNC OUT: 0,3 Vss, 75 Ohm MIC OUT (XLR, 3pol-Stiftstecker) 0 dBs/ − 20 dBs (wählbar), Impedanz 600 Ohm
Steuerbare Funktionen	Kamera-Ein/Aus Blende (automatisch/manuell) Weißabgleich (automatisch/manuell) Schwarzabgleich (automatisch/manuell) Weiß (R/B) Schwarz (Master/R/B) Zentrierung (R/B-horizontal/R/B-vertikal) Anhebung (0 dB/ + 6 dB/ + 9 dB/ + 18 dB) Betriebsartenwahl (Kamera/Balken/Test) Sprechverkehrwahl (gesamt/Kamera) Detailanhebung (ON/OFF) Phase (H/SC) Signallampen, Ruf
Genlock	Einstellbereich der Horizontalphase: + 3 µs bis − 1,5 µs oder mehr in Bezug auf Eingangsphase Einstellbereich der Hilfsträgerphase: 360° Koppelgenauigkeit: H: Innerhalb ± 0,01 µs SC: Innerhalb ± 1°
Blendeneinstellung	Geschlossen ⟷ Offen, Automatisch/Manuell (bei Automatikbetrieb ist eine manuelle Feineinstellung möglich)

Der Eingangs/Ausgangspegel des Komponentensignals genügt der EBU-Norm N-10.

Hauptschwarzwert-Einstellung	Über ±30% des Nennwertes
R/B-Weißabgleich	Über ±20% des Nennwertes
R/B-Schwarzabgleich	Über ±10% des Nennwertes
Zentrierungseinstellung	Über ±1% des Nennwertes
Signallampen/Ruf	Kontakt und Stromversorgung (DC 12V/24V)
Sprechverkehr	4-Leiter-System INPUT: 0 dBs, symmetrisch OUTPUT: 0 dBs, symmetrisch 2-Kabel-System INPUT: 0 dBs, 600 Ohm, symmetrisch OUTPUT: 0 dBs, 600 Ohm, symmetrisch RTS INPUT/OUTPUT: −10 dBs, 200 Ohm, unsymmetrisch
Programmton-Eingang	0/−20 dBs, symmetrisch
Umgebungstemperatur	−10°C bis +40°C
Abmessungen	218 × 168 × 364 mm (B/H/T) einschl. vorspringender Teile
Gewicht	8,5 kg
Mitgeliefertes Zubehör	Netzkabel (1) Erweiterungsplatte (1) Kamera-Nummernplatte (1) Bedienungs- und Wartungsanleitung (1)
Sonderzubehör	Gestellmontageteil (RMM-301) Kameraadapter (CA-3511P, CA-55P) Fernbedienungspult RCP-3711/3721/3731 Master-Setup-Einheit MSU-350

Abmessungen

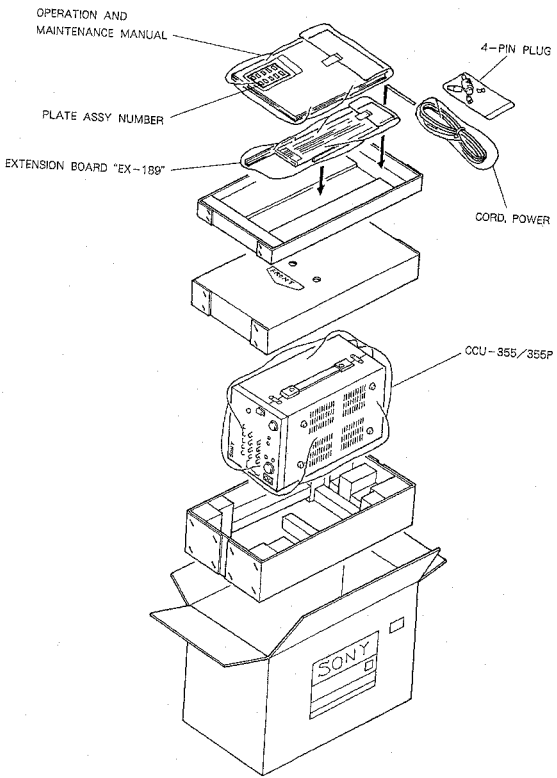


Einheit: mm

Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

SECTION 2
INSTALLATION

2-1. UNPACKING AND REPACKING



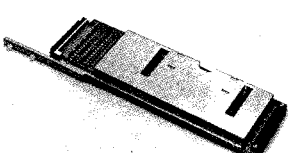
2-2. SUPPLIED ACCESSORIES

Cord, Power : ×1
There are 2.4-meter cords used to supply power to the CCU-355/355P.

(For CCU-355)

(For CCU-355P)

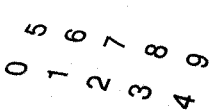
EX-152 (Extension Board) : ×1
Use this for the check and repair of the main printed circuit boards.



OPERATION AND MAINTENANCE MANUAL : ×1
Instruction manual and service manual for CCU-355/355P.

4-pin plug connector : ×1
Available for connection to the waveform monitor of TEKTRONIX' make or equivalent.

Plate, Number : ×1



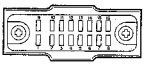
2-3. CONNECTORS/CABLES

2-3-1. Connector Input/Output Signals

The main connector Input/Output Signals are as follows.

- GEN LOCK IN : BNC-type 75 Ω
  (VBS or BS)
- RET 1 IN : BNC-type 75 Ω
  1.0Vp-p
- RET 2 IN : BNC-type 75 Ω
  1.0Vp-p
- SYNC OUT : BNC-type 75 Ω
  0.3Vp-p
- WF OUT : BNC-type 75 Ω
  714mVp-p
- R/R-Y OUT : BNC-type 75 Ω
  R=700mVp-p/1.0Vp-p
  R-Y=700mVp-p (CCU-355)
  525mVp-p (CCU-355P)
- G/Y OUT : BNC-type 75 Ω
  G=700mVp-p/1.0Vp-p
  Y=700mVp-p/1.0Vp-p
- B/B-Y OUT : BNC-type 75 Ω
  B=700mVp-p/1.0Vp-p
  R-Y=700mVp-p (CCU-355)
  525mVp-p (CCU-355P)
- VBS OUT : BNC-type 75 Ω
  1.0Vp-p
- VBS/VB OUT : BNC-type 75 Ω
  1.0Vp-p/714mVp-p
- PIX OUT : BNC-type 75 Ω
  1.0Vp-p

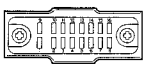
"MSU/CCP"
(16P, FEMALE)



(EXT VIEW)

Pin No	SIGNAL	REMARK for SIGNAL
1	GND chassis	chassis GND
2		
3	PNL DATA OUT (X)	CCU SERIAL DATA OUTPUT
4	PNL DATA OUT (Y)	
5	PNL DATA OUT (G)	
6	MSU DATA IN/OUT (X)	MSU ⇄ CCU SERIAL DATA
7	MSU DATA IN/OUT (Y)	
8	MSU DATA (G)	
9	REG (+24V) OUT	CONTROL PANEL POWER +24V DC
10	GND (+24V)	
11	PNL DATA IN (X)	CONTROL PANEL DATA INPUT
12	PNL DATA IN (Y)	
13	PNL DATA IN (G)	
14	SEQ SYNC IN (X)	SEQ CONTROL INPUT
15	SEQ SYNC IN (Y)	
16	SEQ SYNC IN (G)	

"RCP"
(16P, FEMALE)



(EXT VIEW)

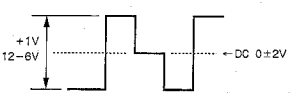
Pin No	SIGNAL	REMARK for SIGNAL
1	GND (chassis)	chassis GND
2	GND (RCP)	
3	NC	Non connection
4	NC	
5	NC	
6	RCP DATA OUT (X)	CCU SERIAL DATA OUTPUT
7	RCP DATA OUT (Y)	
8	RCP DATA OUT (G)	
9	+24V OUT	RCP POWER +24V DC
10	GND (+24V)	
11	NC	Non connection
12	NC	
13	NC	
14	RCP DATA IN (X)	RCP SERIAL DATA INPUT
15	RCP DATA IN (Y)	
16	RCP DATA IN (G)	

"WF MODE"
(4P, FEMALE)

(EXT VIEW)

Pin No	SIGNAL	REMARK for SIGNAL
1	GND	OPEN COLLECTOR
2	SEQ CONT OUT	
3	STAIR CASE OUT	Note 1)
4	GND	chassis GND

Note 1) Stair Case signal



"MIC OUT"
(3P, MALE)

(EXT VIEW)

Pin No	SIGNAL	REMARK for SIGNAL
1	MIC OUT (G)	0dBs/-20dBs
2	MIC OUT (X)	
3	MIC OUT (Y)	

"R TALLY/INCOM"
(7P, MALE)

(EXT VIEW)

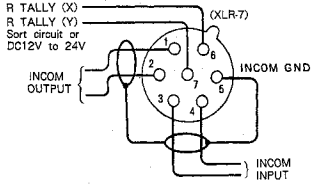
4-wire system
* (Selected on AU-98 board)

Pin No	SIGNAL	REMARK for SIGNAL
1	4W INCOM OUT (X)	0dBm, 600 Ω
2	4W INCOM OUT (Y)	
3	4W INCOM IN (X)	
4	4W INCOM IN (Y)	
5	4W INCOM IN/OUT (G)	
6	R TALLY (X) IN	DC±12 to 24V or CONTACT
7	R TALLY (Y) IN	

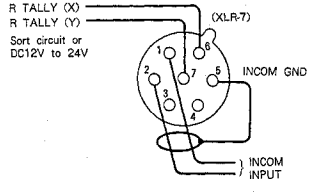
2-wire system
* (Selected on AU-98 board)

Pin No	SIGNAL	REMARK for SIGNAL
1	2W INCOM IN/OUT (X)	0dBm, 600 Ω
2	2W INCOM IN/OUT (Y)	
3	NC	Non connection
4	NC	
5	2W INCOM IN/OUT (G)	GND for 2W INCOM
6	R TALLY (X) IN	DC±12 to 24V or CONTACT
7	R TALLY (Y) IN	

R TALLY/INCOM connector wiring diagram



R TALLY/INCOM connector wiring diagram



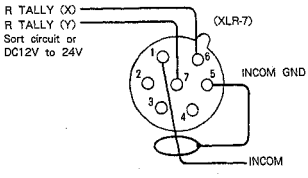
"G TALLY/PGM"
(7P, MALE)

(EXT VIEW)

RTS system
* (Selected on AU-98 board)

Pin No	SIGNAL	REMARK for SIGNAL
1	RTS INCOM IN/OUT (X)	−10dBm, 200 Ω
2	RTS INCOM IN/OUT (Y)	
3	NC	Non connection
4	NC	
5	RTS INCOM IN/OUT (G)	GND for RTS INCOM
6	R TALLY (X) IN	DC±12 to 24V or CONTACT
7	R TALLY (Y) IN	

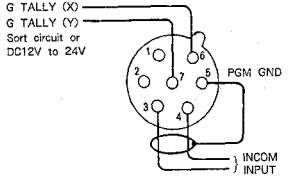
R TALLY/INCOM connector wiring diagram



* (Selected on AU-98 board)

Pin No	SIGNAL	REMARK for SIGNAL
1		
2		
3	PGM IN (X)	0dBs/−20dBs
4	PGM IN (Y)	
5	PGM IN (G)	
6	G TALLY (X) IN	DC±12 to 24V or CONTACT
7	G TALLY (Y) IN	

G TALLY/PGM connector wiring diagram



2-3-2. Connections

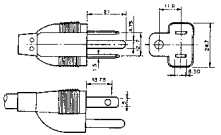
When cables with connectors are set to the respective connectors on the connector panel during installation or service, the specified or equivalent connectors with cables, on the specified cable assemblies should be used, these are listed as follows :

Connector function	Parts No. and name of connector with cable
GEN LOCK INPUT RET-1 INPUT RET-2 INPUT SYNC OUTPUT WF OUTPUT WF MODE OUTPUT R/R-Y OUTPUT G/Y OUTPUT B/B-Y OUTPUT VBS OUTPUT PIX OUTPUT (BNC)	1-560-069-11 PLUG BNC or B-B Cable assembly (Cable length 1.5m optional)
MSU CCU RCP (16P, FEMALE)	1-564-970-11 PLUG, 16P, MALE (P-1616G-C or equivalent)
WF MODE (4P, FEMALE)	1-560-343-00 PLUG, 4P, MALE (Supplied)
MIC OUT (XLR-3P, MALE)	1-508-084-11 XLR-3-12C, 3P, FEMALE
CAMERA (41P, FEMALE)	1-560-332-00 41P, CONNECTOR (P-M), FEMALE
R TALLY/INCOM G TALLY/PGM (XLR-7P, MALE)	1-508-366-11 XLR-7-11C, 7P, FEMALE

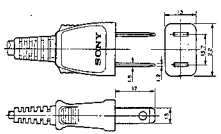
2-4. POWER SUPPLY

Power sources : AC 100V to 240V±10%
Power frequency : 50/60Hz
Power consumption : 135W (MAX)

Cord, power 3P-plug (For CCU-355P)
Cable length about 2.4m
Rated voltage 125V
Rated current 10A



2P-plug (For CCU-355)
Cable length about 2.4m
Rated voltage 125V
Rated current 10A



2-5. OPERATIONAL ACCESSORIES

- Camera Cable
  CCT-100 (100m)
  CCT-150 (150m)
  This is camera cable for connecting the camera and CCU-355/355P.
- Rack Mount Adaptor
  RMM-301
  This is rack mount adaptor for installing CCU-355/355P in the 19-inch rack. Be able to install two CCU-355/355P.
- Camera Adaptor
  CA-3512
  This is camera adaptor for attaching to BVP-350/350P.
  CA-50
  This is camera adaptor for attaching to BVP-50/50P.
- Remote Control Panel
  RCP-3620/A
  RCP-3621/A
  RCP-3630
  RCP-3631/A
- Master Setup Unit
  MSU-360
- Camera Operational Control Unit
  OCU-3610
  OCU-3620
- Camera Operating Software
  BZP-3621 NEC (PC-9801 series)
  BZP-3611 ＊IBM (＊＊IBM PC)

＊ IBM is a registered trademark of International Business Machines Corporation.
＊＊IBM PC is a trademark of International Business Machines Corporation.

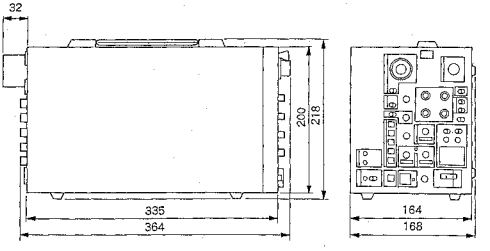
2-6. INSTALLATION

2-6-1. Installation Conditions

Operating temperature : −10℃ to +45℃
Storage temperature : −20℃ to +50℃
Humidety : Non condense

1. Do not install near a heat source as a power supply.
2. Do not install in a intense electric or magnetic fields.
3. Install the unit in a location which is dry and sell ventioated as possible.
4. Avoid using the camera in locations where it will be subjected to violent vibration.

2-6-2. Outside Dimension



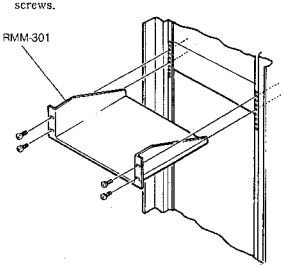
Unit : mm

2-6-3. How to Attach to Rack Mount

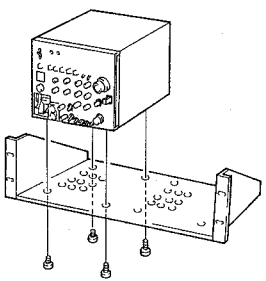
When mounting the CCU-355/355P in the 19-inch rack, use the rack mount adaptor RMM-301 (optional). Be able to install the two CCU-355/355P on the rack mount adaptor.

How to attach to 19-inch rack

1. Attach the rack mount adaptor by fixing the four screws.



2. Install the CCU-355/355P on the rack mount adaptor and fix it by using the four screws (supplied with RMM-301) as follows.



2-7. INITIAL SETTING OF SWITCH

(1) AT-65 Board

• S1 (TRIAX TEST)
Set the switch to OFF.
Set to ON for TRIAX system adjustment.

• S2 (SYSTEM MODE)
Set the switch to "370".
When using the tube camera system MSU-360, etc., set the switch to "360".
Normally set to "370".

• S3 (GROUP SELECT)
When connecting more than nice CCUs to the MSU, this switch selects the group number of the CCU to connect to the VCS-350 used in the SUB mode (expansion mode). The VCS in the SUB mode is connected to the main VCS-350 or VCS-370, and the group number of the CCU is selected according to the connector numbers to be connected at that time.

Input channels of VCS	Setting position of S3
8/A (MSU-350/370)	1
7/B (MSU-370)	2
6/C (MSU-370)	3
5/D (MSU-370)	4

Normally set to "0".

• S4 (CAMERA SELECT)
Set the switch to input channel of the master setup unit VCS-350/370.
Normally set to "0".

• S5 (BUZZER)
When setting the switch to ON, the buzzer in the CCU-355/355P sounds by pressing the CALL button on the camera.

• S6 (TERMINATION)
Set this switch when the CCU is controlled by the MSU. The MSU, CCU and VCS are in the chain connection through the MSU/CCU connectors. Two connectors of each machine are looped through inside the machine and are required to be terminated at both ends of the chain connection. When the CCU is the last machine of the chain connection, set the switch to ON, otherwise to OFF. Normally set to "OFF".

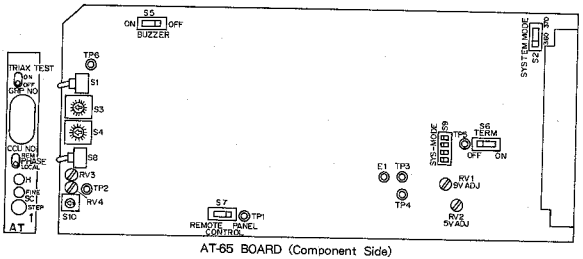
• S7 (CONTROL)
When controlling the CCU on the front panel, set the switch to PANEL. When controlling the CCU on the other remote panels, set the switch to REMOTE. When REMOTE is selected, disables the control on the front panel. (Display system is able.) Normally set to PANEL.

• S8 (PHASE)
Selects the H/SC phase control to REMOTE or LOCAL.
When set to REMOTE, the CCU can be controlled on the remote control panel, etc.
When set to LOCAL, the CCU can be controlled on the AT board.

• S9 (SYS MODE)
Not used

• S10 (SC STEP)
When the phase control is set to LOCAL, the SC phase can be shifted by 90°.

• RV3 and RV4 (H/SC PHASE)
When the phase control is set to LOCAL, the H/SC phase can be controlled.

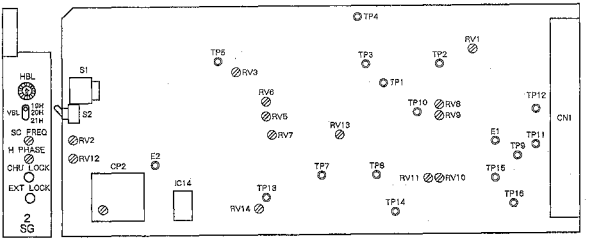


AT-65 BOARD (Component Side)

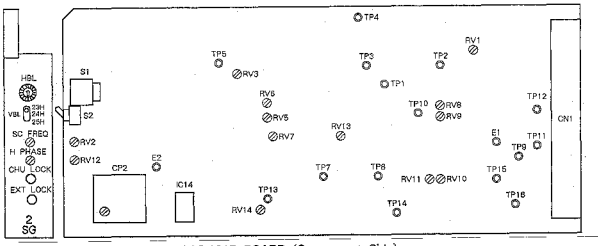
(2) SG-131 Board

- S1 (H BLKG)
  Adjust the horizontal blanking pulse width.
  Normally set to 10.9±0.2 μs (NTSC) /12.05±0.2 μs (PAL).

- S2 (V BLKG)
  Adjust the vertical blanking pulse width.
  Normally set to 20H (NTSC) /24H (PAL).



SG-131 BOARD (Component Side)



SG-131P BOARD (Component Side)

(3) EN-64 Board

- S1 (I)
  When turned on the switch, the I signal is added to the encoder circuit. Use for the encoder circuit adjustment.
  Normally set to "ON".

- S2 (Q)
  When turned on the switch, the Q signal is added to the encoder circuit. Use for the encoder circuit adjustment.
  Normally set to "ON".

- S3 (COLOR BARS)
  This switch is used for selecting the color bar output signal from the CCU in accordance with the switch positions such as "SMPTE", "FULL FIELD" or "EIA".
  Normally set to "SMPTE" position.

- S4 (G/Y SYNC)
  When turned on the switch, the G signal or the Y signal is added to the SYNC signal.
  Normally set to "OFF".

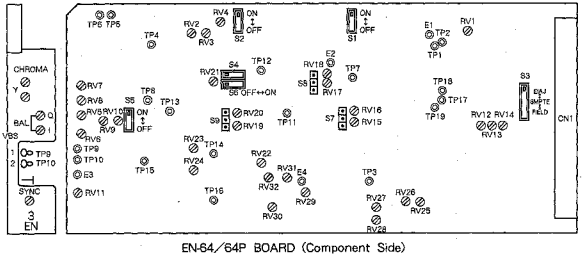
- S5 (VIDEO SYNC)
  When turned on the switch, the VBS/VB output signal on the rear panel is added to the SYNC signal as VBS signal.
  Normally set to "ON".

- S6 (R/R－Y B/B－Y SYNC)
  When turned on the switch, the R/R－Y signal and the B/B－Y signal on the rear panel is added to the SYNC signal.
  Normally set to "OFF".

- S7 (B/B－Y)
  The B signal or the B－Y signal is selected by the short plug.
  Normally set to "B" side.

- S8 (R/R－Y)
  The R signal or the R－Y signal is selected by the short plug.
  Normally set to "R" side.

- S9 (G/Y)
  The G signal or the Y signal is selected by the short plug.
  Normally set to "G" side.



EN-64/64P BOARD (Component Side)

(5) AU-98 Board

- S1 (MIC GAIN)
  This switch is used to set the gain of the microphone to 0dB or −20dB.
  Normally set to 0dBs.

- S2 (PGM ATT)
  This switch is used to set the gain of the program audio input signal to 0dB or to −20dB.
  Normally set to −20dB.

- S3 (INCOM SELECT)
  This switch is used to set the input impedance of the microphone either a carbon or a dynamic.
  Normally set to CARBON.

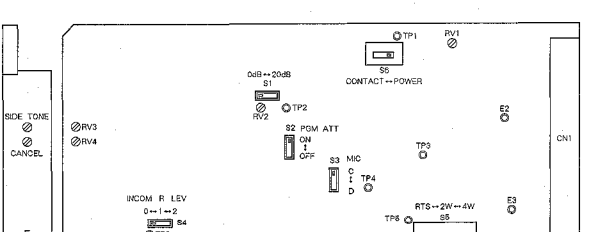
- S4 (INCOM R LEV)
  This switch is used to set the gain of the intercommunication receiving signal either to 0 or to 1 or to 2. One step is 10dB.
  Normally set to "0".

- S5 (RTS/2W/4W)
  This switch is used to set the intercom/program audio system to RTS or to two-wire system or to four-wire system.
  Normally set to "4W".

- S6 (TLY)
  This switch is used to set the interface system of the R tally and G tally.

Remark of signal	Setting position of S6
TALLY : ON The TALLY (X) and TALLY (Y) shorts. TALLY : OFF The TALLY (X) and TALLY (Y) opens.	CONTACT
TALLY : ON The potential difference between the TALLY (X) and the TALLY (Y) is DC12V to 24V TALLY : OFF The potential difference between the TALLY (X) and the TALLY (Y) is 0V or shorts.	POWER

Normally set to POWER



AU-98 BOARD (Component Side)

(6) IF-177 Board

- S1 (MODE SET)
  This switch is unused.

- S2 (MODE)
  By using the AUTO SETUP switch on the camera, the items marked with "○" in the following table can be adjusted automatically. Select the desired auto setup mode. For automatic adjustments, use the diascope built in the lens or the optional BKP-3615 auto setup chart.
  Normally set to "0".

- S3
  Normally set to "OFF".

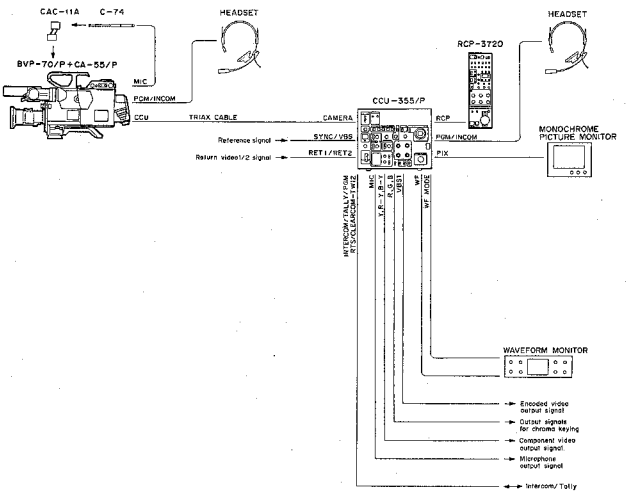
- S8 (SHUTTER SPEED)
  This switch is used to select the shutter speed of the CCD camera.

- S4
  - 1 (FLARE) When turned on the switch, correct the flare by using the R/B BLACK control.
    When turned off the switch, set the black level by using the R/B BLACK control.
    Normally set to "OFF".
  - 2 (GAIN H) When turned on the switch, the gain can be set as follows.
    Normally set to "OFF".

Setting position of S4 – 2	GAIN control			
	0	6	9	18
OFF	0	6	9	18
ON	0	3	6	9

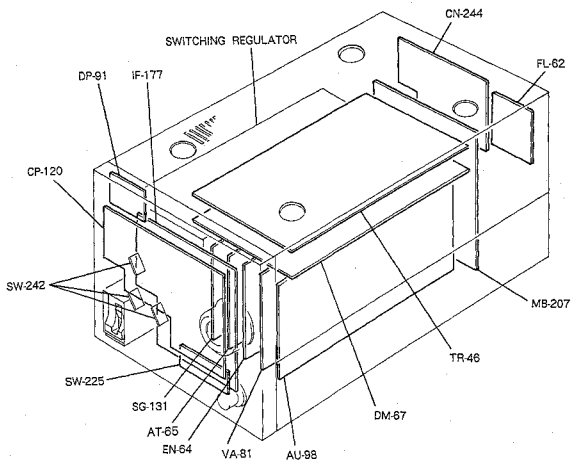
Adjustable items	Setting position of S2									
	INT chart (DIASCOPE)					EXT chart (BKP – 3615)				
	0 CENT	1 QUICK	2 FULL	3 REGI	4 COLOR	8 CENT	9 QUICK	A FULL	B REGI	C COLOR
White balance	–	○	○	–	○	–	○	○	–	○
Black balance	–	○	○	–	○	–	○	○	–	○
Gamma	–	○	○	–	○	–	○	○	–	○
Flare	–	○	○	–	○	–	○	○	–	○
Master black	–	○	○	–	○	–	○	○	–	○
Black set	–	○	○	–	○	–	○	○	–	○
V Modulation shading	–	○	○	–	○	–	○	○	–	○
H centering	○	○	○	○	–	○	○	○	○	–
V centering	○	○	○	○	–	○	○	○	○	–
H size	–	○	○	○	–	–	○	○	○	–
V size	–	○	○	○	–	–	○	○	○	–
H skew	–	○	○	○	–	–	○	○	○	–
V skew	–	○	○	○	–	–	○	○	○	–
Digital registration	–	–	○	○	–	–	–	○	○	–

2-8. SYSTEM EXPANSION



SECTION 3
SERVICE INFORMATION

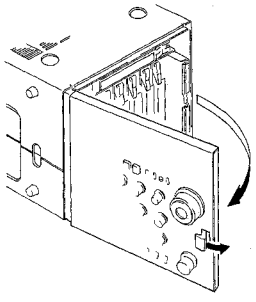
3-1. BOARD LAYOUT



3-2. REPLACEMENT OF MAIN PARTS

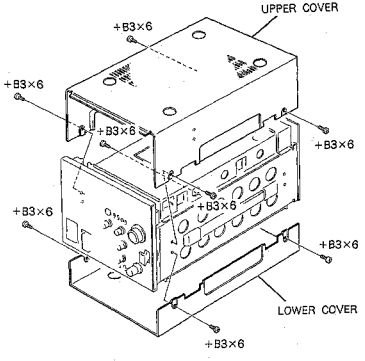
3-2-1. Front Panel Opening/Closing

Pull the lever, and open the front panel.



3-2-2. Cabinet Removal

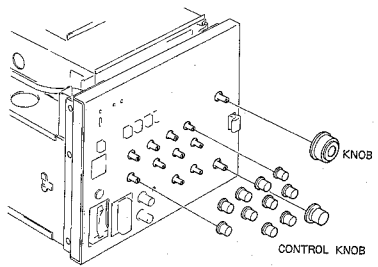
Remove the eight screws (+B3×6) and then remove UPPER COVER and LOWER COVER.



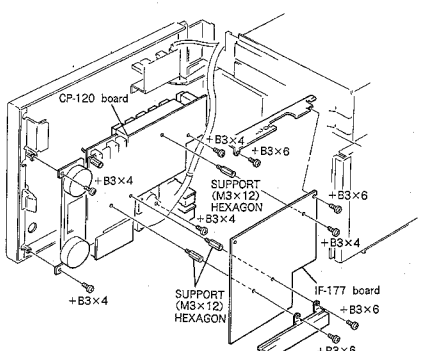
3-2-3. Replacement of IF-177 Board and CP-120 Board

1. Remove the cabinet refer to section 3-2-2. Cabinet Removal.

2. Remove the knob and eleven control knobs on the front panel.



3. Remove the four screws (+B3×6) and screw (+B3×4) shown below and remove the IF-177 board.
   Remove the three support rods (M3×12) and four screws (+B3×4) shown below and CP-120 board.

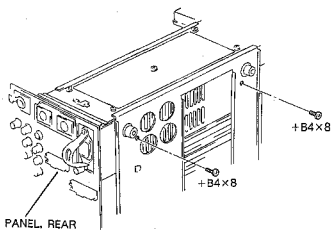


4. To install a new boards, reverse the procedures from 1 to 3.

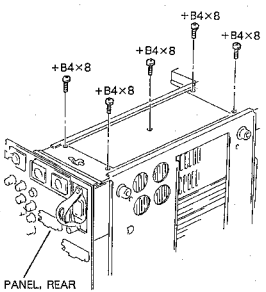
SERVICE INFORMATION

3-2-4. Replacement of Switching Regulator

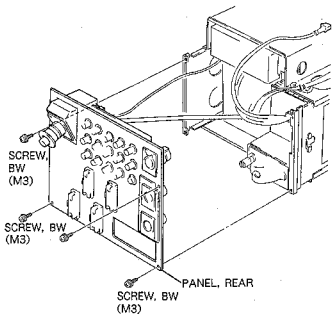
1. Remove the cabinet refer to section 3-2-2.
2. Remove the two +B4×8 screws fixing the shield case.



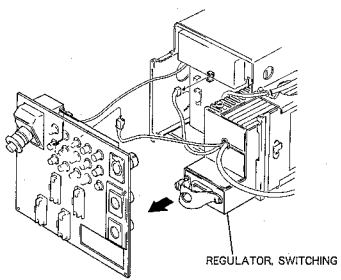
3. Remove the five +B4×8 screws fixing the shield case.



4. Remove the four +B4×8 screws fixing the rear panel.



5. Disconnect the harness and pull out the switching regulator.



6. To install a new switching regulator, reverse the procedures from 1 to 5.

3-3. SERVICING PRECAUTION

3-3-1. Power Supply Unit Precaution

(1) One switching regulator is used as power source of the CCU. Since this switching regulator is mainly on the primary side, it is important to beware of electric shock.

(2) Running the power supply unit under no load may cause power source trouble, so never check the power supply unit independently.

(3) If an abnormality occurs during operation, the power supply unit stops oscillating and does not refunction until the power switch is turned off, then to ON again. Wait 1 minute or longer before setting the POWER switch to on again.

(4) Various DC voltage (+24V, +20V, +9.5V, and −5.5V) are supplied from the Power Supply Unit to respective boards of the CCU-355. These DC voltage circuit effect each other. When a dc voltage circuit broke, the operation of the all dc voltage circuits stop. Therefore, when the dc voltages don't appear at the output terminal of the power supply unit, replace the power supply unit.

Power Supply Unit (Sony part No. 1-413-394-11)

3-3-2. Precaution on Replacement Parts

(1) Safety Related on Components Warning
Components identified by shading marked with ⚠ on the exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony Parts whose part numbers appear in this manual or in Service bulletins and service manual supplement published by Sony.

(2) Standardization of Parts
Repair parts supplied from Sony Parts Center may not be always identical with the part which actually in use due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts". This manual's exploded views and electrical spare parts list are indicating the parts number of " the standardization genuine parts at present".

(3) Stocked of Parts
The parts marked with "S" in the SP column of the exploded views and electrical spare parts list are normally required for routine service work. Order for parts marked with "O" will be processed, but allow for additional delivery time.

(4) Units of Capacitors, Inductors, and Resistors
The following units are omitted in the schematic diagrams, exploded views, and electrical parts lists unless otherwise specified ;
Capacitor : μF
Inductor : μH
Resistor : Ω

3-4. TOOLS AND JIGS

• Adjusting screwdriver
Sony part No. 7-700-733-11

3-5. SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20V AC range are suitable. (See Fig. A)

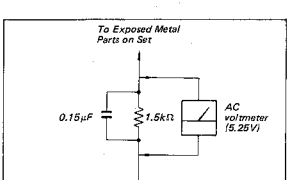


Fig. A. Using an AC voltmeter to check AC leakage.

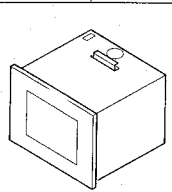
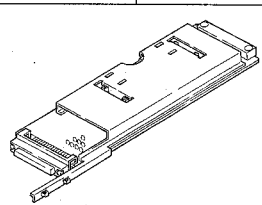
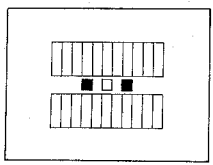
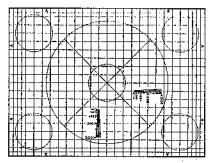
SECTION 4
ALIGNMENT

4-1. PREPARATION

4-1-1. Equipment Required

1. Oscilloscope of more than 300MHz
   Tektronix 2465 or equivalent
2. Waveform monitor
   Tektronix 1485R or equivalent
3. Color monitor
   Sony PVM-1301P or equivalent
4. PAL vectorscope
   Tektronix 521A or equivalent
5. PAL test signal generator
   Tektronix 145 or equivalent
6. Digital voltmeter
7. Frequency counter
8. Low frequency oscillator
9. Variable DC power supply (5V,1A)

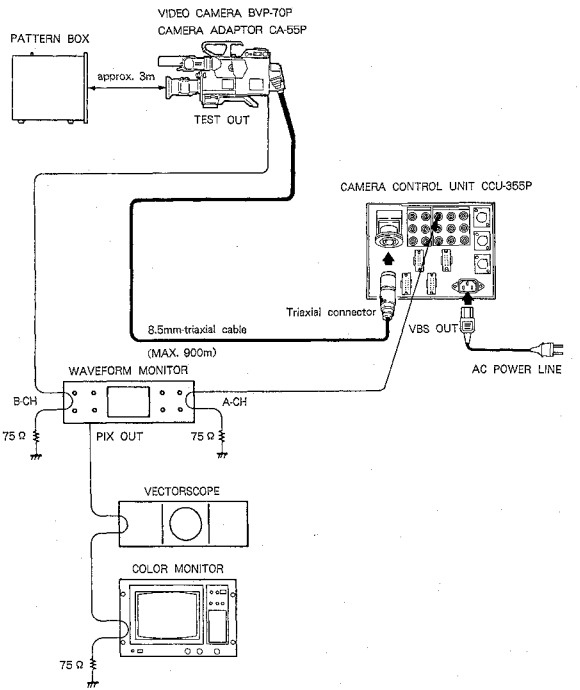
4-1-2. Jigs

J-6029-140-A	Pattern Box PTB-500	A-7513-864-A	Extension Board EX-189
			
J-6026-120-A	Registration Chart	J-6026-130-B	11-step Gray Scale Chart
			

4-1-3. Connection

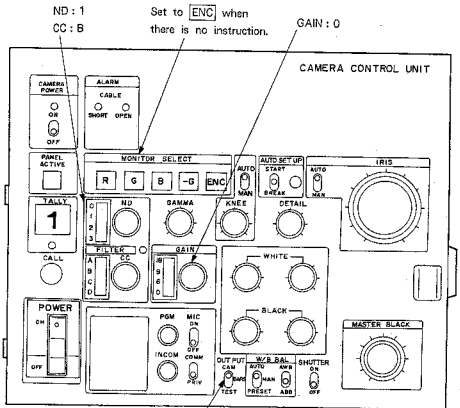
- Connect all equipment as shown in figure below.
- When setting the camera and test pattern, be sure to match the center of lens and pattern box so that the chart frame and underscan frame of monitor coincide. (approx. 3m)

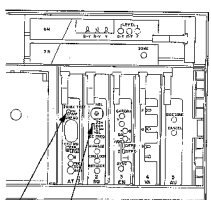
Note : Before adjustment, make sure to see that the alignment of camera is completed.



4-1-4. Initial Setting

1. Before adjustment, turn on the power and warm up for about 10 minutes.
2. Set the front panel and side panel as follows.





3. Set the switches on the respective board as follows.

AT-65 Board
- S2 (SYSTEM MODE) →370
- S7 (CONTROL) →PANEL

EN-64P Board
- S1 (V) →ON
- S2 (U) →ON
- S3 (COLOR BARS) →EBU
- S4 (G/Y SYNC) →OFF
- S5 (VBS2 SYNC) →ON
- S6 (R/R－Y,B/B－Y,SYNC) →OFF

AU-98 Board
- S1 (MIC GAIN) →0dB

4-2. ALIGNMENT PROCEDURE

Step 1. Power Supply System Adjustment
1-1. REG + 22V Adjustment (AU-98 Board)
1-2. REG + 5V Adjustment (SG-131P Board)
1-3. REG + 9V Adjustment (VA-81 Board)
1-4. REG + 5V Adjustment (EN-64P Board)
1-5. REG + 5V Adjustment (AT-65 Board)
1-6. REG + 9V Adjustment (AT-65 Board)
1-7. REG + 9V Adjustment (TR-46 Board)
1-8. REG + 9V Adjustment (DM-67 Board)

Step 2. Genlock Control System Adjustment (SG-131P Board)
2-1. Subcarrier Frequency Adjustment
2-2. SC Phase Adjustment
2-3. H Phase Adjustment
2-4. SYNC Phase Adjustment
2-5. Burst Adjustment
2-6. CHU H Phase Adjustment
2-7. V Reset Adjustment

Step 3. Cable Compensator System Adjustment (DM-67 Board)
3-1. Cable DET Adjustment
3-2. AGC Adjustment (1)
3-3. SYNC Sampling Pulse Width Adjustment
3-4. Black Sampling Pulse Width Adjustment
3-5. 18MHz Carrier Level Adjustment
3-6. Y PLL Adjustment
3-7. Y Demodulation Adjustment (1)
3-8. Y Demodulation Adjustment (2)
3-9. Y Level Adjustment
3-10. PRE AGC Adjustment
3-11. AGC Adjustment (2)
3-12. 36MHz Carrier Level Adjustment
3-13. B − Y Demodulation Adjustment (1)
3-14. B − Y Demodulation Adjustment (2)
3-15. R − Y Demodulation Adjustment (1)
3-16. R − Y Demodulation Adjustment (2)

Step 4. Video Signal System Adjustment (VA-81 Board)
4-1. Video Level Adjustment

Step 5. Encoder System Adjustment (EN-64P Board)
5-1. Carrier Balance Adjustment
5-2. R/G/B Output Level Adjustment
5-3. Color Bar Level Adjustment
5-4. BETACAM Output Level Adjustment
5-5. VBS Y Level Adjustment
5-6. VBS SYNC Level Adjustment
5-7. Color Bar Adjustment
5-8. VBS/VB Level Adjustment
5-9. WF Output Level Adjustment
5-10. DC Offset Adjustment
5-11. STAIR CASE Adjustment
5-12. PIX Output Adjustment
5-13. PIX SYNC Phase Adjustment

Step 6. Triax System Adjustment (TR-46 Board)
6-1. Return Level Adjustment
6-2. RF Level Adjustment
6-3. Frequency Set Adjustment
6-4. PGM Level Adjustment
6-5. INCOM Level Adjustment
6-6. DATA Tuning Adjustment
6-7. MIC Tuning Adjustment
6-8. INCOM Tuning Adjustment

Step 7. Control System Adjustment (IF-177 Board)
7-1. Iris Control Setting
7-2. R/B Gamma Adjustment
7-3. G Flare Adjustment
7-4. R/B Registration (H/V CENT) Adjustment

Step 8. Intercom System(AU-98 Board)
8-1. Mic Level Adjustment
8-2. Side Tone/Cancel Adjustment

STEP 1. POWER SUPPLY SYSTEM ADJUSTMENT

Note :

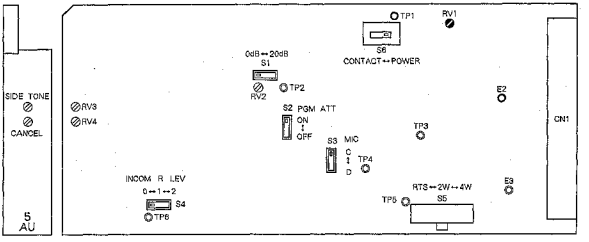
- Before performing the adjustment of step 2 and later, measure the voltage at respective board. If measured voltage is within ±1% as against the rated voltage, adjustment is unnecessary.
  If voltage does not satisfy the rated voltage, or voltage does not output, repiace the power supply unit.
  Power Supply Unit (Sony Part No. 1-413-352-11)
- When adjustment of step 1 is performed, all of the following steps must be performed.
- When performing the adjustment, be sure to connect the color camera BVP-350P in order to obtain proper loading condition.

Equipment : Digital voltmeter

1-1. REG +22V Adjustment (AU-98 Board)

To be extended : AU-98
Test point : TP1 (GND=E2) /AU-98

Adj. point : RV1 (+22V ADJ) /AU-98
Specification : +22V±0.01Vdc

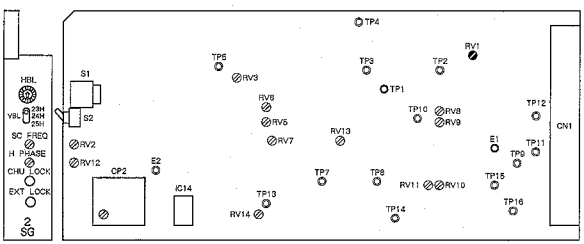


AU-98 BOARD (Component Side)

1-2. REG +5V Adjustment (SG-131P Board)

To be extended : SG-131P
Test Point : TP1 (GND=E1)

Adj. point : RV1 (+5V ADJ) /SG-131P
Specification : +5V±0.01Vdc

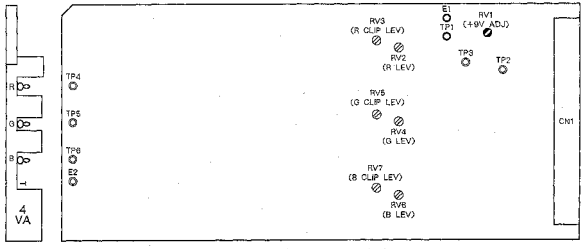


SG-131P BOARD (Component Side)

1-3. REG +9V Adjustment (VA-81 Board)

To be extended : VA-81
Test point : TP1 (GND=E1)

Adj. point : ●RV1 (+9V ADJ) /VA-81
Specification : +9V±0.01Vdc

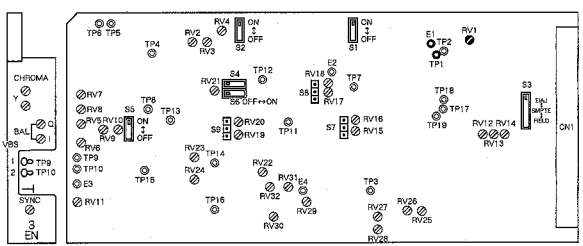


VA-81 BOARD (Component Side)

1-4. REG +5V Adjustment(EN-64P Board)

To be extended: EN-64P
Test point: TP1 (GND = E1)

Adj. point: ●RV1 (+5V ADJ) /EN-64P
Specification: +5V ± 0.01Vdc



EN-64/64P BOARD (Component Side)

1-5. REG +5V Adjustment(AT-65 Board)

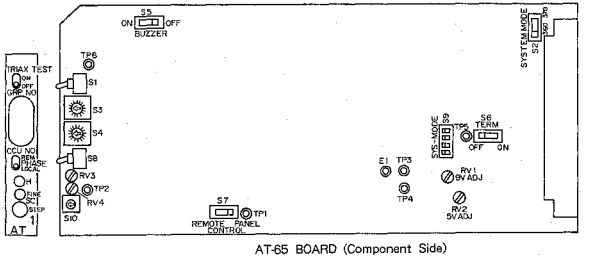
To be extended: AT-65
Test point: TP1 (GND = E1)

Adj. point: ●RV2 (+ 5V ADJ) /AT-65
Specification: + 5V ± 0.01Vdc

1-6. REG +9V Adjustment

To be extended: AT-65
Test point: TP3 (GND = E1)

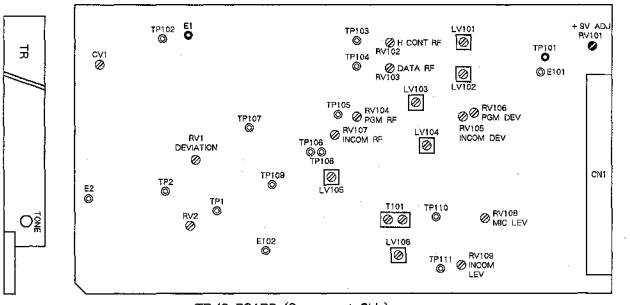
Adj. point: ●RV1
Specification: + 9V ± 0.1Vdc



AT-65 BOARD (Component Side)

1-7. REG +9V Adjustment (TR-46 Board)

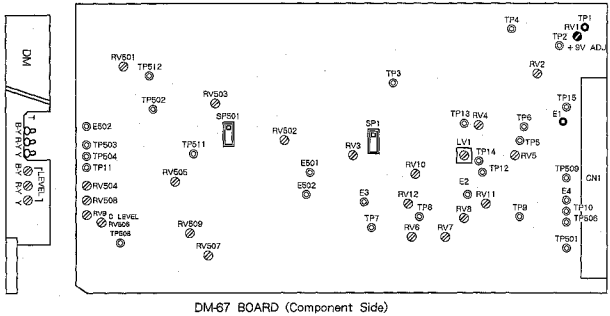
To be extended: TR-46
Test point: TP101 (GND = E1)
Adj. point: ◐RV101 (+ 9V ADJ) /TR-46
Specification: + 9V ± 0.01Vdc



TR-46 BOARD (Component Side)

1-8. REG +9V Adjustment (DM-67 Board)

To be extended: DM-67
Test point: TP1 (GND = E1)
Adj. point: RV1 (+ 9V ADJ) /DM-67
Specification: + 9V ± 0.01Vdc



DM-67 BOARD (Component Side)

STEP 2. GENLOCK CONTROL SYSTEM ADJUSTMENT(SG-131P Board)

2-1. Subcarrier Frequency Adjustment

Note

- Be sure to check that the unit is not in the GENLOCK mode.

To be extended: SG-131P
Equipment: Frequency counter
Digital voltmeter
Test point: TP5 (GND = E1) /SG-131P

Adj. point:

- ⊘ RV2 (SC FREQ) /SG-131P
- CP2/SG-131P

Procedure:

1. Adjust ⊘RV2 so that the voltage at TP5 is 2.5 ± 0.1V.
2. Adjust ⊘CP2 so that the frequency at pin 10 or pin 14 of IC14 is 4.433618MHz ± 2Hz.

2-2. SC Phase Adjustment

Preparation

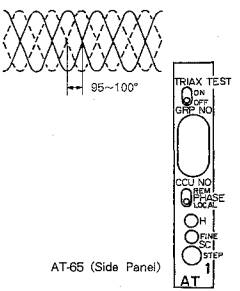
- ⊘RV11 (SC PHASE) /SG-131P→mechanical center
- OUTPUT switch/front panel→BARS
- S8 (PHASE) /AT-65→LOCAL

To be extended: SG-131P
Equipment: Oscilloscope
Test point: TP15/SG-131P

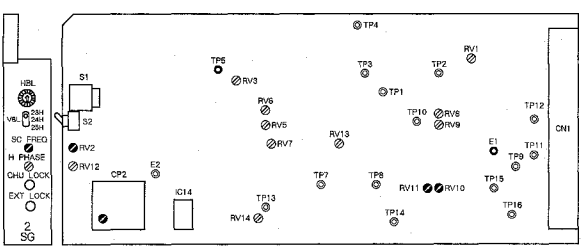
Adj. point: ⊘RV10 (SC RANGE) /SG-131P

Procedure:

- Adjust ⊘ RV10 (SC RANGE) so that the subcarrier phase can be shifted 95° to 100° when ⊘RV4 SC PHASE is turned.



AT-65 (Side Panel)



SG-131P BOARD (Component Side)

2-3. H Phase Adjustment

Preparation

- ⊘RV3 [H PHASE] /AT-65→fully counterclockwise◯

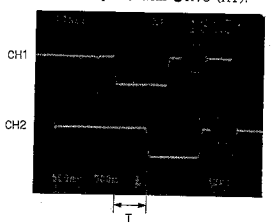
To be extended: SG-131P
Equipment: Oscilloscope
Test point: CH1 = TP7/extension board
CH2 = TP9/EN-64P
Trigger: CH1

Adj. point:

- ⊘ RV12 (H PHASE) /SG-131P
- ⊘ RV3 (H CONT RANGE) /SG-131P

Procedure:

1. Set ⊘RV3 [H PHASE] on the AT-65 board fully counterclockwise and adjust ⊘RV12 and ⊘RV3 (SG) alternately until T becomes 3 μ S.
2. Set ⊘RV3 [H PHASE] fully clockwise and adjust ⊘RV12 and ⊘RV3 (SG) alternately until T becomes − 1.5 μ S.
3. After the adjustment, adjust CH2 sync phase equal in CH1 phase with ⊘RV3 (AT).



2-4. SYNC Phase Adjustment

Preparation

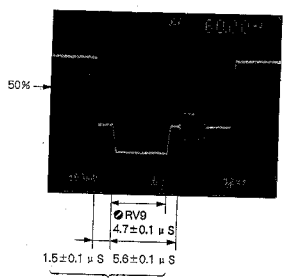
- [OUTPUT] switch/front panel→[CAM]
- Adjust the zoom control so that the pattern box frame touches the underscanned picture frame on the monitor.

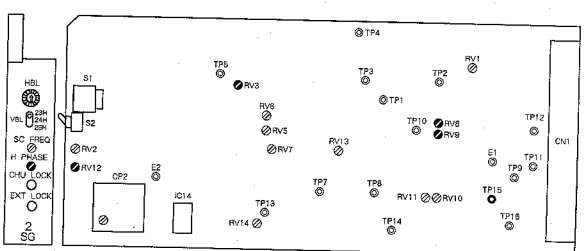
To be extended: SG-131P
Equipment: Oscilloscope
Test point: TP10 (VBS OUT) /EN-64P

Adj. point:

- ⊘RV8 (SYNC PHASE) /SG-131P
- ⊘RV9 (SYNC WIDTH) /SG-131P

Specification:





SG-131P BOARD (Component Side)

2-5. Burst Adjustment

- Supply VBS or BLACK BURST signal to the GENLOCK IN terminal at the rear panel of CCU. It is to be desired that other GENLOCK IN terminal will be terminated with 75 Ω.

Preparation

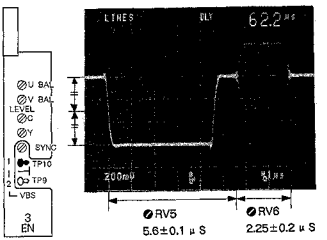
- OUTPUT switch/front panel→BARS

To be extended : SG-131P
Equipment : Oscilloscope
Waveform monitor
Test point : TP10 (VBS OUT) /EN-64P

Adj. point :

- ⊘RV5 (BURST START) /SG-131P
- ⊘RV6 (BURST STOP) /SG-131P

Specification :



EN-64P (Side Panel)

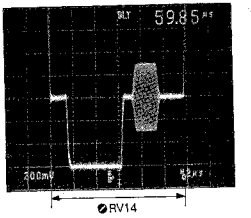
2-6. CHU H Phase Adjustment

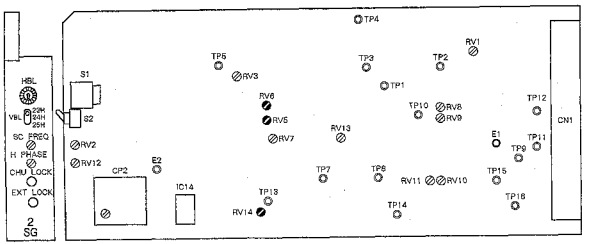
Preparation

- OUTPUT switch/front panel→CAM
- Adjust the zoom control so that the pattern box frame touches the underscanned picture frame on the monitor.

To be extended : SG-131P
Equipment : Oscilloscope
Test point : TP10 (VBS OUT) /EN-64P

Adj. point : ⊘RV14 (CHU H PHASE) /SG-131P
Specification : Adjust ⊘RV4 until the camera blanking does not appear at active scanning time.





SG-131P BOARD (Component Side)

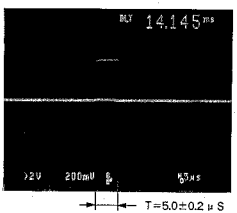
2-7. V Reset Adjustment

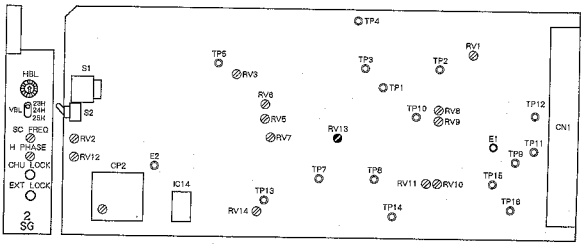
Preparation

• OUTPUT switch/front panel→CAM

To be extended : SG-131P
Equipment : Oscilloscope
Test point : TP30/extension board
Trigger : TP32 (VD) /extension board

Adj. point : ●RV13 (V RESET ADJ) /SG-131P
Specification : T=5.0±0.2 μ S





SG-131P BOARD (Component Side)

STEP 3. CABLE COMPENSATOR SYSTEM ADJUSTMENT (DM-67 Board)

3-1. CABLE DET Adjustment (1)

Note

- This adjustment is complicated and severe, and it is strictly performed at the factory. So, do not turn the variable resistor in this adjustment unless something is wrong with the circuit.

Preparation

1. Make two jigs referring to the figure below.
2. Remove a shielding plate from the extension board. Unsolder a jumper lead connected to pin 10.
3. Solder the shielded wire made above where the jumper lead was soldered.
4. Connect the two BNC connectors to attenuator as illustrated.

To be extended : DM-67
Equipment : Attenuator, Oscilloscope
Test point : TP4
Adj. point : ◐RV2 (CABLE LENGTH DET)

Procedures :

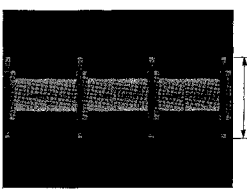
1. Set the attenuator to 12dB.
2. Turn ◐RV2 fully clockwise.
3. Make sure that the DC voltage at TP4 is 2.5V.
4. Slowly turn ◐RV2 counterclockwise and stop it at the point where the level at TP4 just falls to the GND level.
5. Set the attenuator to more than 18dB and attenuate it gradually.
   Repeat ◐RV2 so that the level at TP4 just falls from 2.5V to the GND level with the attenuator set to 12 $\pm\frac{1}{4}$dB.

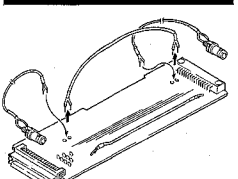
3-2. AGC Adjustment (1)

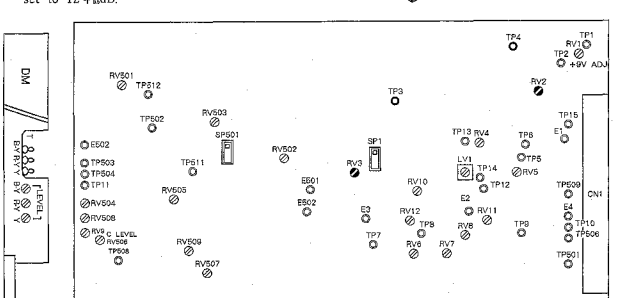
Preparation

- SP1/DM-67 → OFF

To be extended : DM-67
Equipment : Oscilloscope
Test point : TP3
Adj. point : ◐RV3 (AGC LEVEL)
Specification : 500±20mV



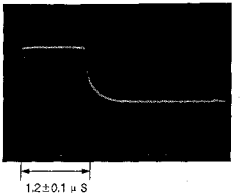




DM-67 BOARD (Component Side)

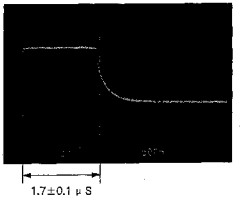
3-3. SYNC Sampling Pulse Width Adjustment

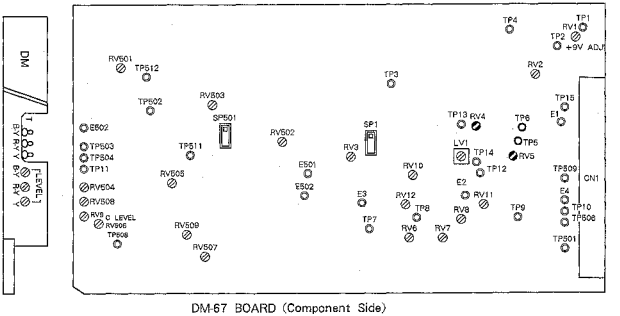
To be extended : DM-67
Equipment : Oscilloscope
Test point : TP5
Adj. point : ◐RV4 (SYNC S/H WIDTH)
Specification : 1.2±0.1 μ S



3-4. Black Sampling Pulse Width Adjustment

To be extended : DM-67
Equipment : Oscilloscope
Test point : TP6
Adj. point : ◐RV5 (BLACK S/H WIDTH)
Specification : 1.7±0.1 μ S

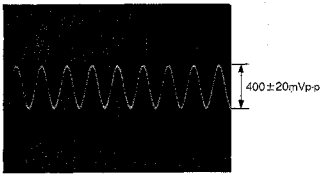




DM-67 BOARD (Component Side)

3-5. 18MHz Carrier Level Adjustment

To be extended : DM-67
Equipment : Oscilloscope
Test point : TP8
Adj. point : ◐RV8 (C LEVEL)
Specification : 400±20mVp-p



3-6. Y PLL Adjustment

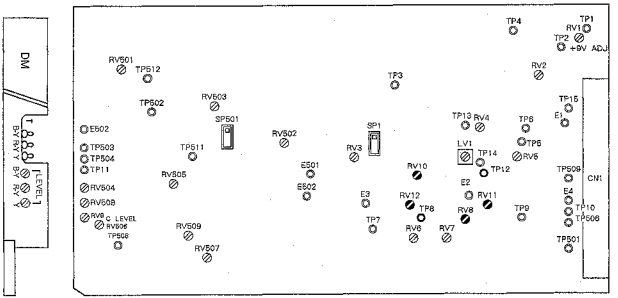
To be extended : DM-67
Equipment : Oscilloscope
Test point : TP12
Adj. point : ◐RV10 (C BAL)
◐RV11 (PLL SET)
◐RV12 (SIG BAL)

Procedure :

1. Turn ◐RV11 fully clockwise.
2. Adjust ◐RV10 so that the waveform level at TP12 is maximum.

3. Turn ◐RV11 counterclockwise so that the waveform is flat or the level of SYNC portion is 0±2mV.

4. Adjust ◐RV12 so that the DC level of waveform is 0±10mVdc.



DM-67 BOARD (Component Side)

3-7. Y Demodulation Adjustment (1)

Note

- This adjustment is complicated and severe, and it is strictly performed at the factory. So, do not turn the variable resistor in this adjustment unless something is wrong with the circuit.

Preparation

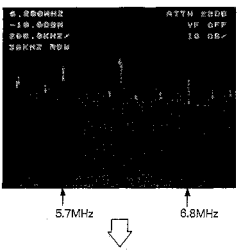
- Connect the camera to CCU with a triaxial cable of 900 meters.

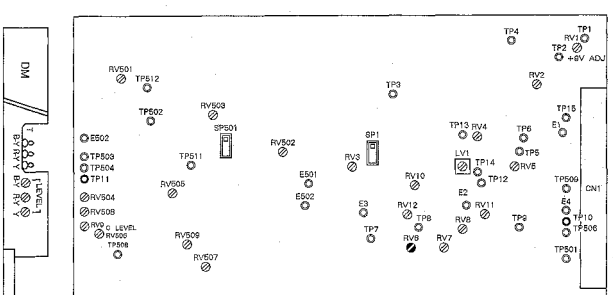
To be extended : DM-67
Equipment : Oscilloscope, Spectrum Analyzer
Test point : TP11, TP10
Adj. point : ◐RV6 (C BAL)

Procedures :

1. Adjust ◐RV6 so that the waveform level at TP11 is maximum.

2. Put a probe of the spectrum analyzer to TP10. Adjust ◐RV6 so that the levels at 5.7MHz and 6.8MHz are both minimum.



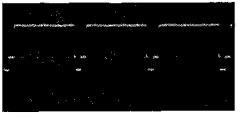


DM-67 BOARD (Component Side)

3-8. Y Demodulation Adjustment (2)

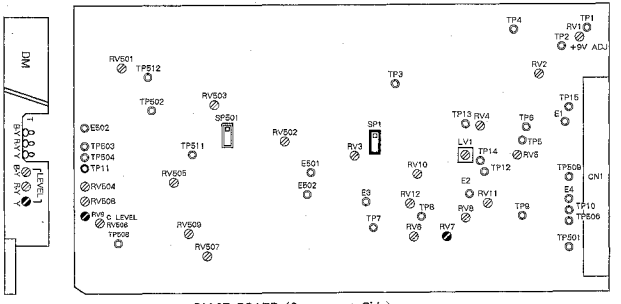
Preparation
• SP1/DM-67→OFF

To be extended : DM-67
Equipment : Oscilloscope
Test point : TP11
Adj. point : ◐RV7 (90° SET)
Specification : The waveform level is maximum



3-9. Y Level Adjustment

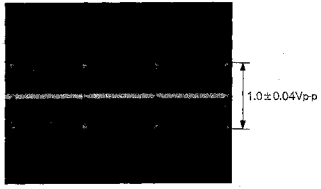
To be extended : DM-67
Equipment : Oscilloscope
Test point : TP36 (G : TP37) /extension board
Adj. point : ◐RV9 (Y LEVEL)
Specification : 700±10mV



DM-67 BOARD (Component Side)

3-10. PRE AGC Adjustment

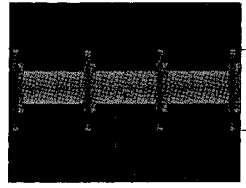
To be extended : DM-67
Equipment : Oscilloscope
Test point : TP512
Adj. point : ◢RV501 (PRE AGC)
Specification : 1.0±0.04Vp-p

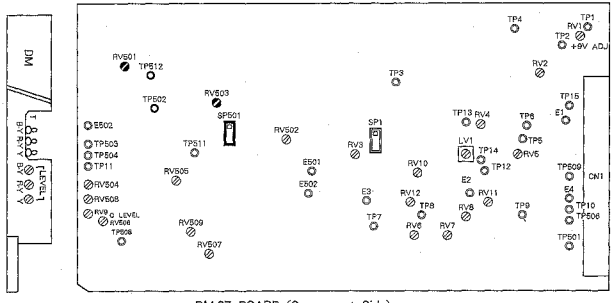


3-11. AGC Adjustment (2)

Preparation
• SP501/DM-67 → OFF

To be extended : DM-67
Equipment : Oscilloscope
Test point : TP502
Adj. point : ◢RV503 (AGC LEVEL)
Specification : 300±20mVp-p

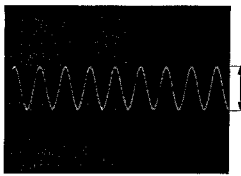




DM-67 BOARD (Component Side)

3-12. 36MHz Carrier Level Adjustment

To be extended : DM-67
Equipment : Oscilloscope
Test point : TP508
Adj. point : ◐RV506 (C LEVEL)
Specification : 400±20mVp-p



3-13. B-Y Demodulation Adjustment (1)

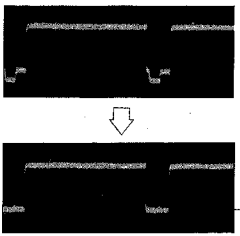
Preparation

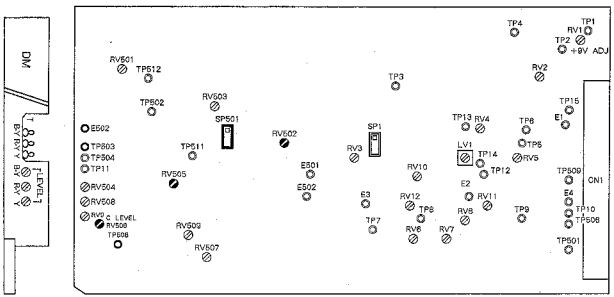
- S1 (R), S2 (G) /MD-54 (CA-3511) → OFF
- SP501/DM-67 → OFF

To be extended : DM-67
Equipment : Oscilloscope
Test point : TP503 (GND : E502)
Adj. point : ◐RV502 (PLL SET)
◐RV505 (C BAL)

Procedures :

1. Turn ◐RV502 fully clockwise.
2. Adjust ◐RV505 so that the waveform level at TP503 is maximum.
3. Turn ◐RV502 counterclockwise until the level of SYNC portion is 0±2mV.

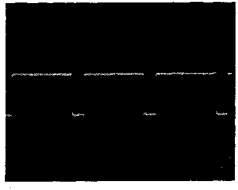




DM-67 BOARD (Component Side)

3-14. B-Y Demodulation Adjustment (2)

To be extended : DM-67
Equipment : Oscilloscope
Test point : TP40 (GND : TP41) /extension board
Adj. point : ◐RV504 (B-Y LEVEL)
Specification : 420±5mV



3-15. R-Y Demodulation Adjustment (1)

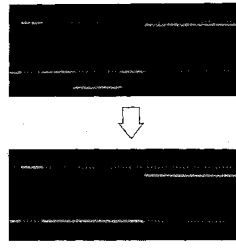
Preparation

• S2 (G), S3 (B) /MD-54 (CA-3511) →OFF

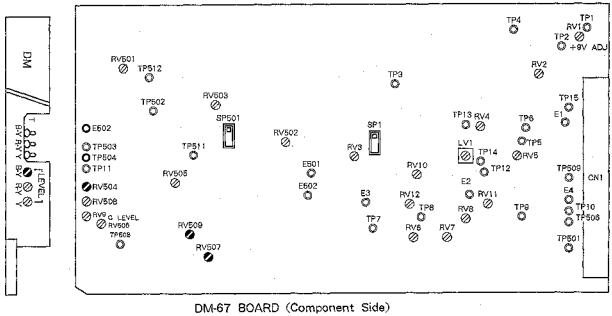
To be extended : DM-67
Equipment : Oscilloscope
Test point : TP504 (GND : E502)
Adj. point : ◐RV507 (90° SET)
◐RV509 (C BAL)

Procedure :

1. Turn ◐RV507 fully clockwise.
2. Adjust ◐RV509 so that the waveform level at TP504 is maximum.



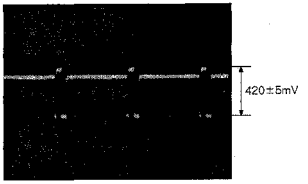
3. Turn ◐RV507 counterclockwise until the level of SAMPLE PULSE portion is 0±2mV.

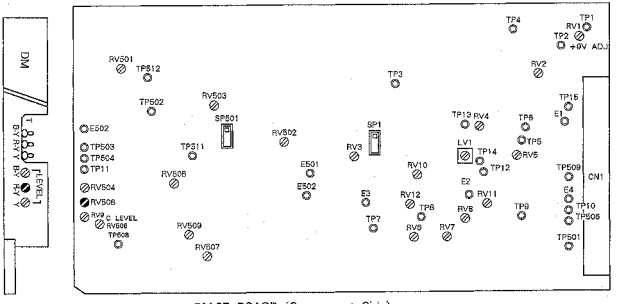


DM-67 BOARD (Component Side)

3.16. R-Y Demodulation Adjustment (2)

To be extended : DM-67
Equipment : Oscilloscope
Test point : TP30 (GND : TP31) / extension board
Adj. point : RV508 (R-Y LEVEL)
Specification : 420±5mV





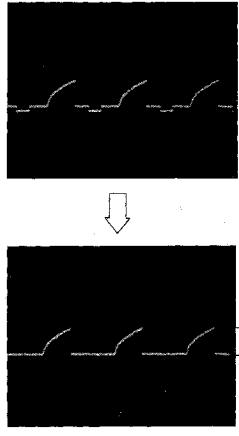
DM-67 BOARD (Component Side)

STEP 4. VIDEO SIGNAL SYSTEM ADJUSTMENT (VA-81 Board)

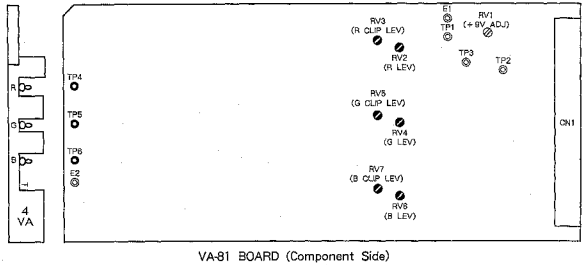
4-1. Video Level Adjustment

Preparation
- OUTPUT selector→TEST
- S1 (TRIAX TEST) /AT-65→OFF

To be extended: VA-81
Equipment: Oscilloscope
Test point: TP4 (R) TP5 (G) TP6 (B)
Adj. point:
⊘RV2 (R LEVEL) ⊘RV3 (R CLAMP LEVEL)
⊘RV4 (G LEVEL) ⊘RV5 (G CLAMP LEVEL)
⊘RV6 (B LEVEL) ⊘RV7 (B CLAMP LEVEL)



Procedure:
1. Adjust ⊘RV3 so that the waveform level at TP4 is flat.
2. Adjust ⊘RV2 so that the waveform level at TP4 is 700 ± 20mV.
3. Adjust ⊘RV5 so that the waveform level at TP5 is flat.
4. Adjust ⊘RV4 so that the waveform level at TP5 is 700 ± 20mV.
5. Adjust ⊘RV7 so that the waveform level at TP6 is flat.
6. Adjust ⊘RV6 so that the waveform level at TP6 is 700 ± 20mV.



VA-81 BOARD (Component Side)

STEP 5. ENCODER SYSTEM ADJUSTMENT(EN-64P Board)

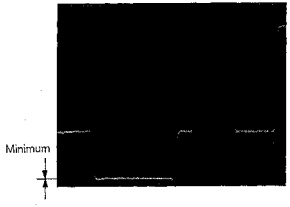
5-1. Carrier Balance Adjustment

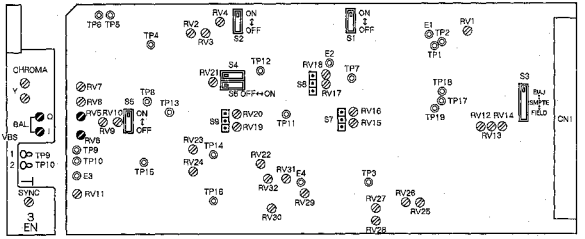
Preparation
- OUTPUT switch/front panel→BARS

To be extended: EN-64P
Equipment: Waveform monitor
Test point: Waveform monitor

Adj. point:
- ⊘RV6 (V CARRIER BAL) /EN-64P
- ⊘RV5 (U CARRIER BAL) /EN-64P

Procedure:
- Adjust ⊘RV6 and ⊘RV5 so that the carrier leak at the sync signal portion on the waveform monitor minimize.



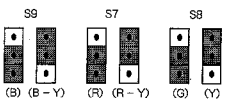


EN-64/64P BOARD (Component Side)

5-2. R/G/B Output Level Adjustment

Note

- When the output connector at the rear panel of the CCU is not terminated with 75 Ω terminator, measured value becomes double amplitude.
- Output signal can be selected by the setting of jumper switches S7, S8, and S9 as follows. In this adjustment, select R, G and B positions.



Preparation

- OUTPUT switch/front panel→TEST

To be extended: EN-64P
Equipment: Oscilloscope

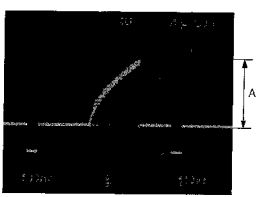
[B Output Level Adjustment]

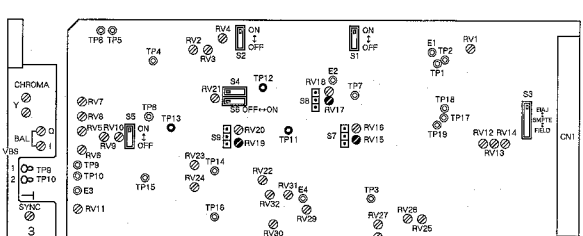
Test point: TP13/EN-64P

Adj. point: ●RV19 (B LEVEL) /EN-64P

Procedure:

1. Connect between the channel A of the waveform monitor and B/B – Y connector at the rear panel.
2. Adjust ●RV19 so that the level A is 1400 ± 20mV.





EN-64/64P BOARD (Component Side)

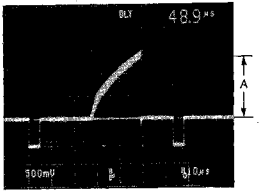
[R Output Level Adjustment]

Test point : TP11/EN-64P

Adj. point : ◐RV15 (R LEVEL) /EN-64P

Procedure :

1. Connect between the channel A of the waveform monitor and R/R−Y connector at the rear panel.
2. Adjust ◐ RV15 so that the level A is 1400±20mV.



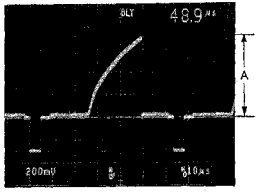
[G Output Level Adjustment]

Test point : TP12/EN-64P

Adj. point : ◐RV17 (G LEVEL) /EN-64P

Procedure :

1. Connect between the channel A of the waveform monitor and G/Y connector at the rear panel.
2. Adjust ◐ RV17 so that the level A is 1400±20mV.



5-3. Color Bar Level Adjustment

Preparation
- OUTPUT switch/front panel→BARS

To be extended: EN-64P
Equipment: Oscilloscope

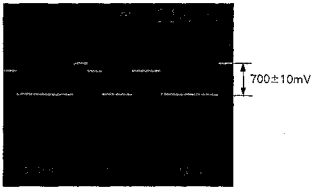
Test point: TP17 (R LEVEL)
TP18 (G LEVEL)
TP19 (B LEVEL)

Adj. point:
- RV12 (R LEVEL) /EN-64P
- RV13 (G LEVEL) /EN-64P
- RV14 (B LEVEL) /EN-64P

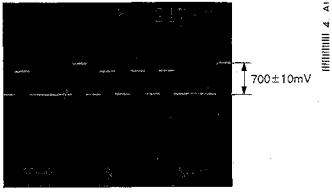
Procedure:

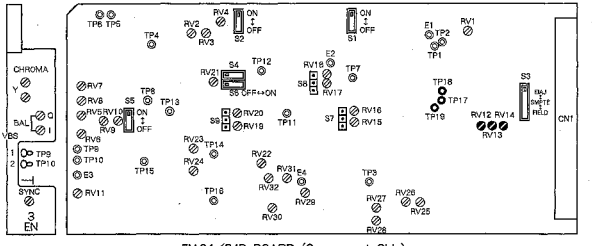
1. Adjust RV13 so that the amplitude at TP18 is 700 ± 10mV.

2. Adjust RV12 so that the amplitude at TP17 is 700 ± 10mV.



3. Adjust RV14 so that the amplitude at TP19 is 700 ± 10mV.



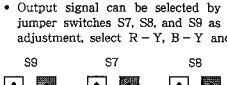


EN-64/64P BOARD (Component Side)

5-4. BETACAM Output Level Adjustment

Note

- When the output connector at the rear panel of the CCU is not terminated with 75 Ω terminator, measured value becomes double amplitude.
- Output signal can be selected by the setting of jumper switches S7, S8, and S9 as follows. In this adjustment, select R − Y, B − Y and Y positions.



Preparation

- OUTPUT switch/front panel → BARS

To be extended: EN-64P
Equipment: Oscilloscope

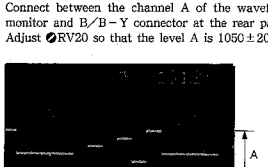
[B − Y Output Level Adjustment]

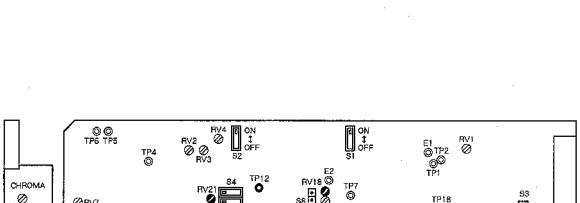
Test point: TP13/EN-64P

Adj. point: ◐RV20 (B − Y LEVEL) /EN-64P

Procedure:

1. Connect between the channel A of the waveform monitor and B/B − Y connector at the rear panel.
2. Adjust ◐RV20 so that the level A is 1050 ± 20mV.





EN-64/64P BOARD (Component Side)

[R – Y Output Level Adjustment]

Test point: TP11/EN-64P

Adj. point: ⊘ RV16 (R – Y LEVEL) /EN-64P

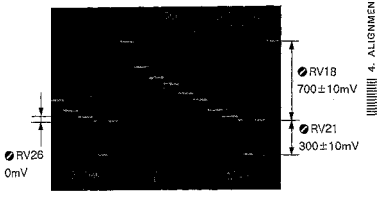
Procedure:
1. Connect between the channel A of the waveform monitor and R/R – Y connector at the rear panel.
2. Adjust ⊘RV16 so that the level A is 1050 ± 20mV.

[Y Output Level Adjustment]

Test point: TP12/EN-64P

Adj. point:
- ⊘RV18 (Y LEVEL) /EN-64P
- ⊘RV26 (Y SETUP LEVEL) /EN-64P
- ⊘RV21 (SYNC LEVEL) /EN-64P

Procedure:
1. Turn ⊘RV26 fully counterclockwise.
2. Adjust ⊘RV18 so that the white peak is 700 ± 10mV.
3. Adjust ⊘RV21 so that the sync level is 300 ± 10mV.



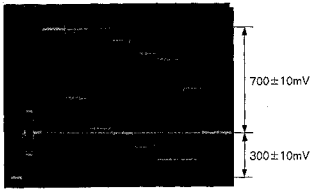
5-5. VBS Y Level Adjustment

Preparation
• OUTPUT switch/front panel→BARS

To be extended: EN-64P
Equipment: Waveform monitor

Adj. point:
• ◐RV8 (Y LEVEL) /EN-64P
• ◐RV11 (SYNC LEVEL) /EN-64P

Procedure:
1. Adjust ◐RV8 so that the white peak is 700 ± 20mV.
2. Adjust ◐RV11 so that the sync level is 300 ± 20mV.

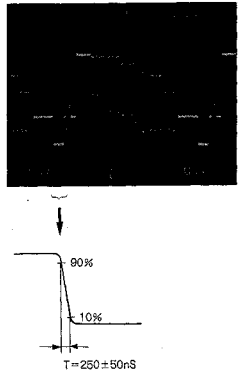


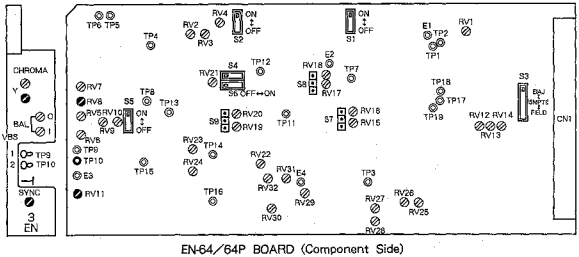
5-6. VBS SYNC Phase Adjustment

Preparation
• OUTPUT switch/front panel→BARS

To be extended: EN-64P
Equipment: Oscilloscope
Waveform monitor
Test point: TP10/EN-64P

Adj. point: ◐LV3/EN-64P
Specification: T = 250 ± 50nS





EN-64/64P BOARD (Component Side)

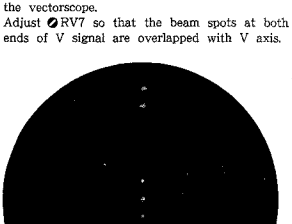
5-7. Color Bar Adjustment

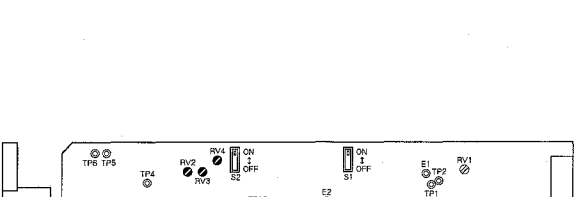
Preparation
- OUTPUT switch/front panel→BARS
- S2 (U) /EN-64P→OFF

To be extended: EN-64P
Equipment: Vectorscope

Adj. point:
- RV7 (CHROMA LEVEL) /EN-64P
- RV2 (BURST LEVEL) /EN-64P
- RV3 (BURST PHASE) /EN-64P
- RV4 (U GAIN) /EN-64P
- LV1 (SC PHASE) /EN-64P

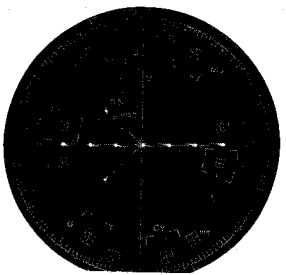
Procedure:
1. Adjust the PHASE control on the vectorscope so that the V signal is overlapped with V axis on the vectorscope.
2. Adjust RV7 so that the beam spots at both ends of V signal are overlapped with V axis.



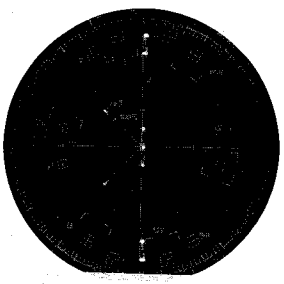


EN-64/64P BOARD (Component Side)

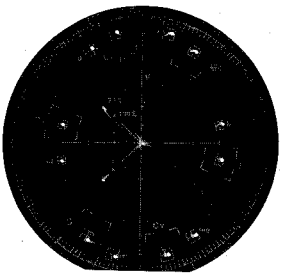
3. S1 (V) /EN-64P→OFF
   S2 (U) /EN-64P→ON
4. Adjust the PHASE control on the vectorscope so that the U signal is overlapped with U axis.
5. Adjust ◐RV4 so that the beam spots at both ends of U signal are overlapped with U axis.



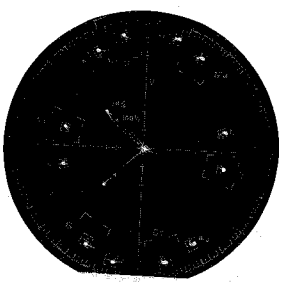
6. S1 (V) /EN-64P→ON
7. S2 (U) /EN-64P→OFF
8. Adjust the PHASE control on the vectorscope so that the U signal is overlapped with U axis.
9. Adjust ◐LV1 so that the V signal is overlapped with V axis.



10. S2 (U) /EN-64P→ON
11. Adjust the PHASE control on the vectorscope so that the burst signal is overlapped with 75% axis of the vectorscope.



12. Adjust ◐RV2 and ◐RV3 so that the BURST signal is overlapped with 75% scale on the vectorscope.
13. Confirm that the all beam spots of color bar signal are located in the specified area "⊞" on the vectorscope. If not, readjust this adjustment.



5-8. VBS/VB Level Adjustment

Preparation

- Connect the output cable to the VBS/VB connector.
- OUTPUT switch/front panel→TEST

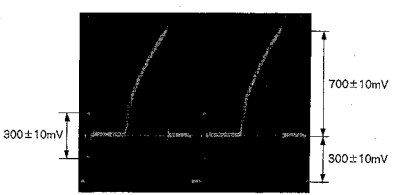
To be extended: EN-64P
Equipment: Waveform monitor
Test point: Waveform monitor

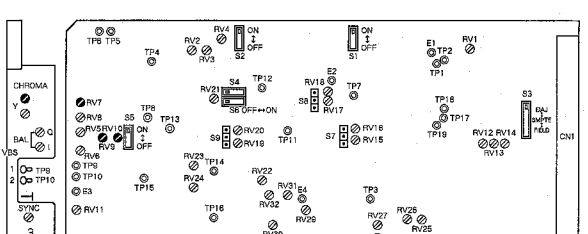
Adj. point:

- ◐RV7 (CHROMA LEVEL) /EN-64P
- ◐RV9 (VBS2 OUTPUT LEVEL) /EN-64P
- ◐RV10 (SYNC LEVEL) /EN-64P

Procedure:

1. Adjust ◐RV9 so that the white peak level is 700 ± 10mV.
2. Adjust ◐RV7 so that the burst level is 300 ± 10mV.
3. Adjust ◐RV10 so that the sync level is 300 ± 10mV.
4. After the adjustment, connect the output cable to the VBS connector.





EN-64/64P BOARD (Component Side)

5-9. WF Output Level Adjustment

Note

- When the WF output connector at the rear panel of the CCU is not terminated with 75Ω terminator, measured value becomes double amplitude.
- This adjustment should be performed only when potentiometer is replaced to new one.
- Selection of output signal to the WF output connector will carry out by applying +5V to the extension board's test terminal. Therefore, in order to protect ICs, be sure to remove chip resistors R37 through R40 on the AT-65 board.

	Extension Board				
	35 pin	34 pin	33 pin	32 pin	
ENC	0	0	0	0	
R	0	1	0	0	
G	0	0	1	0	
B	0	1	1	0	1 : 5V 0 : 0V

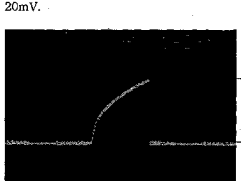
Preparation

- Connect between the channel A of the waveform monitor and the WF output connector at the rear panel.
- G signal can be output by applying +5V to pin33 on the extension board from the DC power supply.

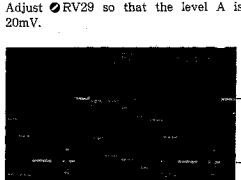
To be extended: EN-64P
Equipment: Oscilloscope
Test point: TP16/EN-64P

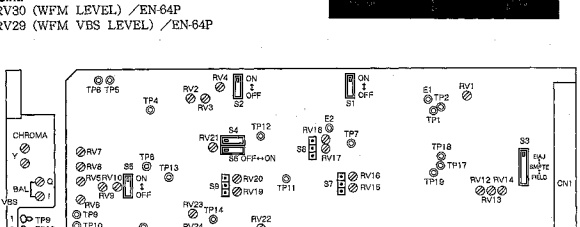
Adj. point:
- ◐RV30 (WFM LEVEL) /EN-64P
- ◐RV29 (WFM VBS LEVEL) /EN-64P

Procedure:
1. OUTPUT switch/front panel→TEST
2. Adjust ◐RV30 so that the level A is 1400 ± 20mV.



3. OUTPUT switch/front panel→BARS
4. Adjust ◐RV29 so that the level A is 1400 ± 20mV.





EN-64/64P BOARD (Component Side)

5-10. DC Offset Adjustment

Note

- This adjustment should be performed only when potentiometer is replaced to new one.
- Selection of output signal to the WF output connector will carry out by applying +5V to the extension board's test terminal. Therefore, in order to protect ICs, be sure to remove chip resistors R37 through R40 on the AT-65 board.

	Extension Board			
	35 pin	34 pin	33 pin	32 pin
ENC	0	0	0	0
R	0	1	0	0
G	0	0	1	0
B	0	1	1	0

1 : 5V
0 : 0V

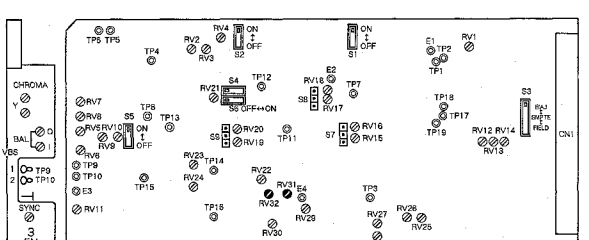
Preparation

- OUTPUT switch/front panel→TEST
- Connect between the channel A of the waveform monitor and the WF connector at the rear panel.

To be extended: EN-64P
Equipment: Waveform monitor

Adj. point:

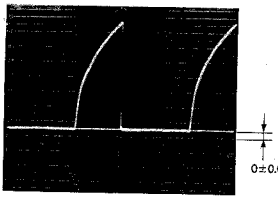
- RV31 (WFM R LEVEL) /EN-64P
- RV32 (WFM B LEVEL) /EN-64P



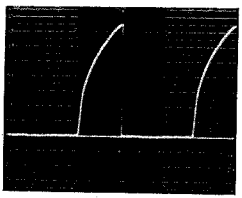
EN-64/64P BOARD (Component Side)

Procedure :

1. Set the DC RESTORER button on the waveform monitor to OFF.
2. Apply +5V to pin 33 on the extension board from the DC power supply in order to select the G signal.
3. Adjust VERTICAL POSITION control on the waveform monitor so that the pedestal level is overlapped to the reference line.
4. Apply +5V to pin 34 on the extension board from the DC power supply in order to select the R signal.
5. Adjust ◐RV31 so that the offset level of the R signal and G signal are equal.



R and B signals



G signal

6. Apply +5V to pins 33 and 34 on the extension board from the DC power supply in order to select the B signal.
7. Adjust ◐RV32 so that the offset level of the B signal and G signal are equal.
8. After the adjustment, set the DC RESTORER switch on the waveform monitor to SLOW position.

5-11. STAIR CASE Adjustment

Preparation

- Connect by the 4-pin connector (supplied accessories) between WF MODE OUT connector at the rear panel and the waveform monitor.
- In order to set the waveform monitor in the SEQUENTIAL mode, apply +5V to pin 35 on the extension board from the DC power supply.

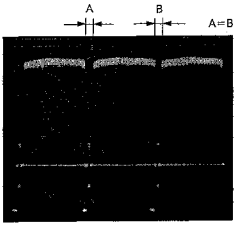
To be extended: EN-64P
Equipment: Oscilloscope
Test point: TP51/extension board
Trigger: TP36 (VD) /extension board

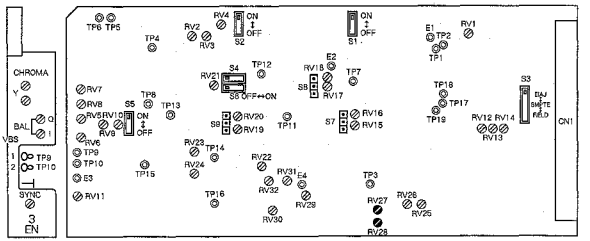
Adj. point:

- ⊘RV27 (STAIR STEP GAIN) /EN-64P
- ⊘RV28 (STAIR STEP DC) /EN-64P

Procedure:

1. Adjust ⊘RV27 and ⊘RV28 so that the interval among three waveforms is equal.





EN-64/64P BOARD (Component Side)

5-12. PIX Output Adjustment

Preparation

- Connect between the channel A of the waveform monitor and the PIX connector at the rear panel.
- MONITOR SELECT button/front panel→G

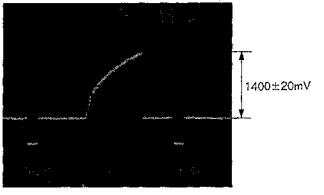
To be extended: EN-64P
Equipment: Oscilloscope
Waveform monitor
Test point: TP15/EN-64P

Adj. point:

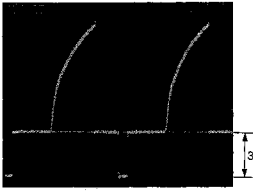
- ⊘RV22 (PIX SYNC LEVEL) /EN-64P
- ⊘RV23 (PIX VBS LEVEL) /EN-64P
- ⊘RV24 (PIX LEVEL) /EN-64P

Procedure:

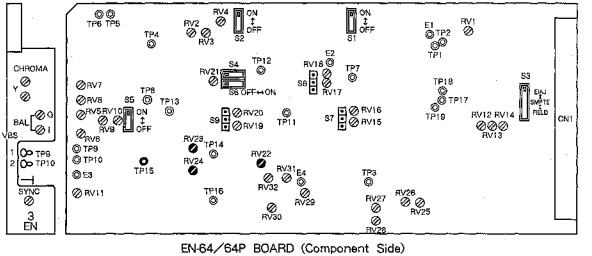
1. OUTPUT switch/front panel→TEST
2. Adjust ⊘RV24 so that the TEST SAW peak level is 1400 ± 20mV.



3. Adjust ⊘RV22 so that the sync level on the waveform monitor is 300 ± 10mV.



4. MONITOR SELECT button/front panel→ENC
5. OUTPUT switch/front panel→BAR
6. Adjust ⊘RV23 so that the white peak is 1400 ± 20mV.



EN-64/64P BOARD (Component Side)

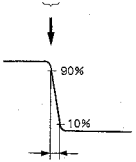
5-13. PIX SYNC Phase Adjustment

Preparation

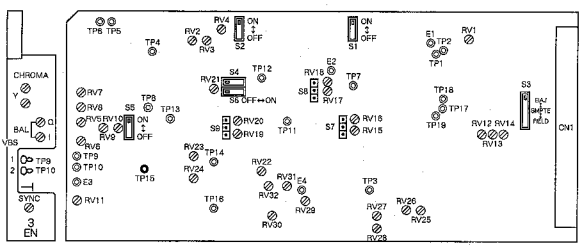
- OUTPUT switch/front panel→BARS
- MONITOR SELECT button/front panel→ENC

To be extended: EN-64P
Equipment: Oscilloscope
Test point: TP15/EN-64P

Adj. point: ●LV2 (SYNC PHASE)
Specification: T = 250 ± 50nS



T=250±50nS



EN-64/64P BOARD (Component Side)

STEP 6. TRIAX SYSTEM ADJUSTMENT (TR-46 Board)

6-1. Return Level Adjustment

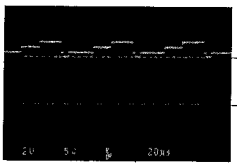
Preparation

Connect a test signal generator to the RET1 connector on the rear panel of the CCU-355P with a BNC cable.

To be extended : TR-46
Equipment : Test signal generator
Oscilloscope
Test point : TP1
Adj. point : ◐RV2

Procedure :

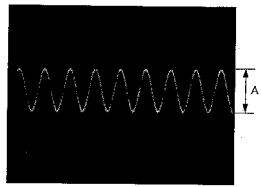
1. Set each mode for the test signal generator as follows.
   - 3 STEP
   - LINEARITY
   - APL 50%
   - STD
   - B/W
2. Adjust ◐ RV2 so that the DC voltage of waveform is 4.2±0.1Vdc.

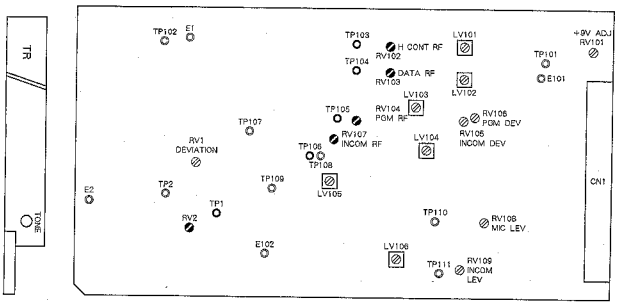


6-2. RF Level Adjustment

To be extended : TR-46
Equipment : Oscilloscope

	Test point	Adj. point	Specification A [mV]
H CONT	TP103	◐RV102	500±10
DATA	TP104	◐RV103	500±10
INCOM	TP106	◐RV107	500±10
PGM	TP105	◐RV104	300±10





TR-46 BOARD (Component Side)

6-3. Frequency Set Adjustment

Note

Be sure not to supply the signal to the INCOM of the CCU-355P side and the PGM line.

Preparation

Pull the VA-81 board out of CCU-355P during this adjustment.

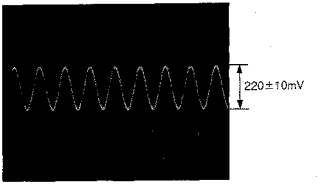
To be extended : TR-46
Equipment : Frequency counter

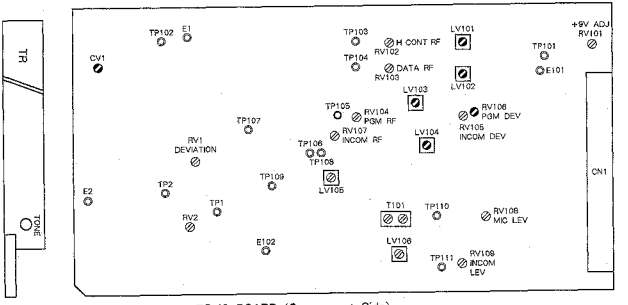
	Test point	Adj. point	Specification [MHz]
PGM	TP105	◐LV103	4.9±0.003
CCU DATA	TP104	◐LV102	3.6±0.003
CCU INCOM	TP106	◐LV104	4.5±0.003
H CONT	TP103	◐LV101	3.9±0.003
RET RF	TP2	◐CV1	68.5±0.1

Note : After this adjustment is completed, insert the VA-81 board where it was.

6-4. PGM Level Adjustment

To be extended : TR-46
Equipment : Oscilloscope
Test point : TP105
Adj. point : ◐RV106 (PGM DEV)
Specification : 220±10mV

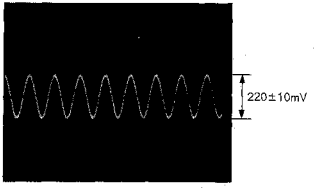




TR-46 BOARD (Component Side)

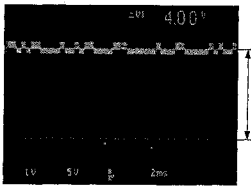
6-5. INCOM Level Adjustment

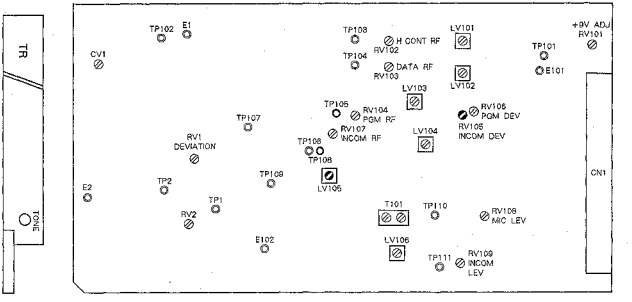
To be extended : TR-46
Equipment : Oscilloscope
Test point : TP106
Adj. point : ◐RV105 (INCOM DEV)
Specification : 220±10mV



6-6. DATA Tuning Adjustment

To be extended : TR-46
Equipment : Oscilloscope
Test point : TP108
Adj. point : ◐LV105 (DATA TUNE)
Specification : 4.2±0.1Vdc

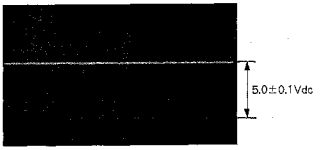




TR-46 BOARD (Component Side)

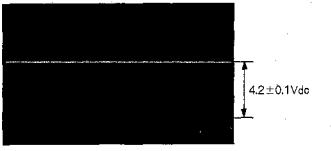
6-7. MIC Tuning Adjustment

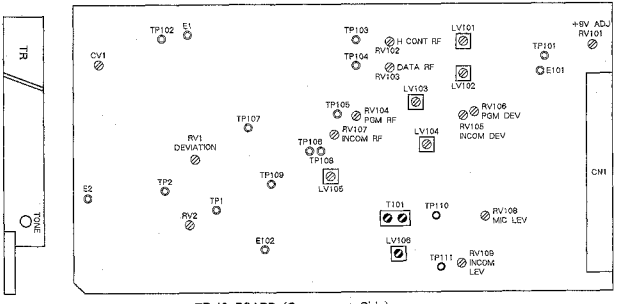
To be extended : TR-46
Equipment : Oscilloscope
Test point : TP110
Adj. point : ◐T101 (MIC TUNE)
Specification : 5.0±0.1Vdc



6-8. INCOM Tuning Adjustment

To be extended : TR-46
Equipment : Oscilloscope
Test point : TP111
Adj. point : ◐LV106 (INCOM TUNE)
Specification : 4.2±0.1Vdc





TR-46 BOARD (Component Side)

STEP 7. CONTROL SYSTEM ADJUSTMENT(IF-177 Board)

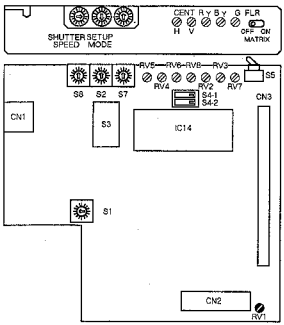
7-1. Iris Control Setting

Preparation

- AUTO/MAN switch/front panel→MAN
- IRIS CONTROL /front panel
  →○ fully counterclockwise

Adj. point: ●RV1 (IRIS CLS SET) /IF-177

Specification: Adjust ●RV1 so that the lens iris moves and stays at the "C" position.



IF-177 BOARD (Component Side)

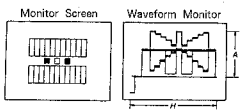
7-2. R/B Gamma Adjustment

Preparation

- ENC/REGI switch/BVP-350P side panel→REGI
- R/G/B switch/BVP-350P side panel→G
- −G/OFF switch/BVP-350P side panel→OFF

Object: Gray scale chart
(Chart frame ≈ underscan monitor frame)

Lens iris: A = 700 ± 10mV

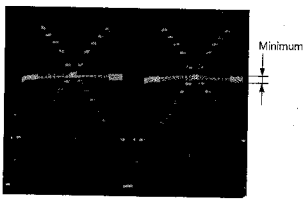


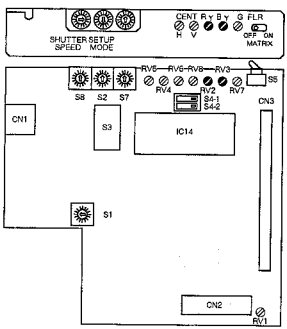
Adj. point:

- ◐RV2 (R γ) /IF-177
- ◐RV3 (B γ) /IF-177

Procedure:

1. Set the waveform monitor to mode A, and adjust ◐RV2 and ◐RV3 so that the carrier leak at the cross point on the gray scale minimize.





IF-177 BOARD (Component Side)

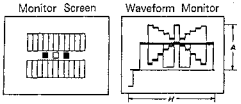
7-3. Flare Adjustment

Preparation

- S4 (FLARE) switch/IF-177→ON
- ENC/REGI switch/BVP-350P side panel→REGI
- R/G/B switch/BVP-350P side panel→G
- G/OFF switch/BVP-350P side panel→OFF

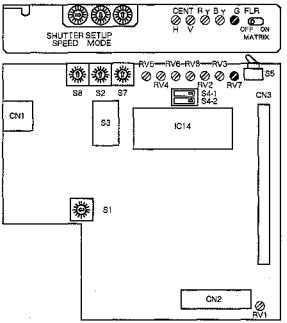
Object: Gray scale chart
(Chart frame = underscan monitor frame)

Lens Iris: A = 700 ± 10mV



Adj. point:

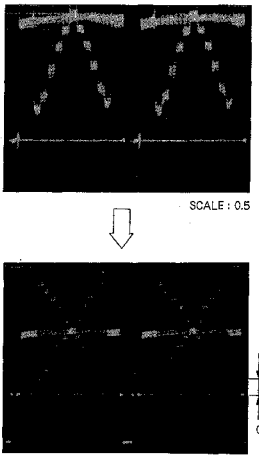
- RV7 (G FLR) /IF-177
- BLACK control : Right (R FLR) /front panel
- BLACK control : Left (B FLR) /front panel



IF-177 BOARD (Component Side)

Procedure:

1. Set the waveform monitor to mode A. Adjust BLACK control on the front panel so that the carrier leak at the black level portion is minimum.
2. Set the waveform monitor to mode B. Adjust RV7 so that black level is 0V.



7-4. R/B Registration (H/V CENT) Adjustment

Note

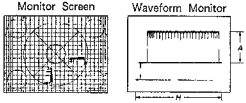
- Confirm that the pedestal adjustment of the camera is completely aligned.

Preparation

- OUTPUT switch/front panel→CAM
- ENC/REGI switch/BVP-350P side panel→REGI
- R/G/B switch/BVP-350P side panel→R
- −G/OFF switch/BVP-350P side panel→−G

Object: Registration chart
(Chart frame = underscan monitor frame)

Lens iris: A = 700mV

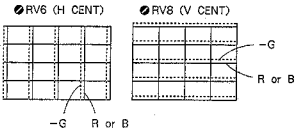


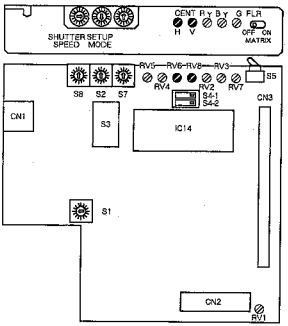
Adj. point:

- RV6 (H CENT) /IF-177
- RV8 (V CENT) /IF-177

Procedure:

1. Set the MONITOR SELECT button to R and −G, and adjust RV6 and RV8 for the best possible registration on channel R.
2. Set the MONITOR SELECT button to B and −G, and adjust RV6 and RV8 for the best possible registration on channel B.



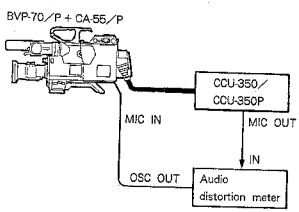


IF-177 BOARD (Component Side)

STEP 8. INTERCOM SYSTEM ADJUSTMENT (AU-98 Board)

8-1. Mic Level Adjustment

Connection



To be extended : AU-98
Equipment : Audio distortion meter

Adj. point : ⊘RV2 (MIC LEVEL) /AU-98

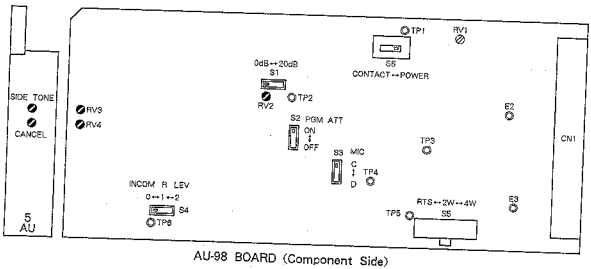
Procedure :

1. Set the audio distortion meter as follows.
   - FUNCTION ..... LEVEL
   - INPUT ATT 20dB
   - METER RANGE ..... −10dB
   - FREQ. RANGE 1kHz
2. Adjust ⊘ RV2 so that the meter indication is −10dB.

8-2. Side Tone/Cancel Adjustment

Adj. point :
- ⊘RV3 (SIDE TONE) /AU-98
- ⊘RV4 (CANCEL) /AU-98

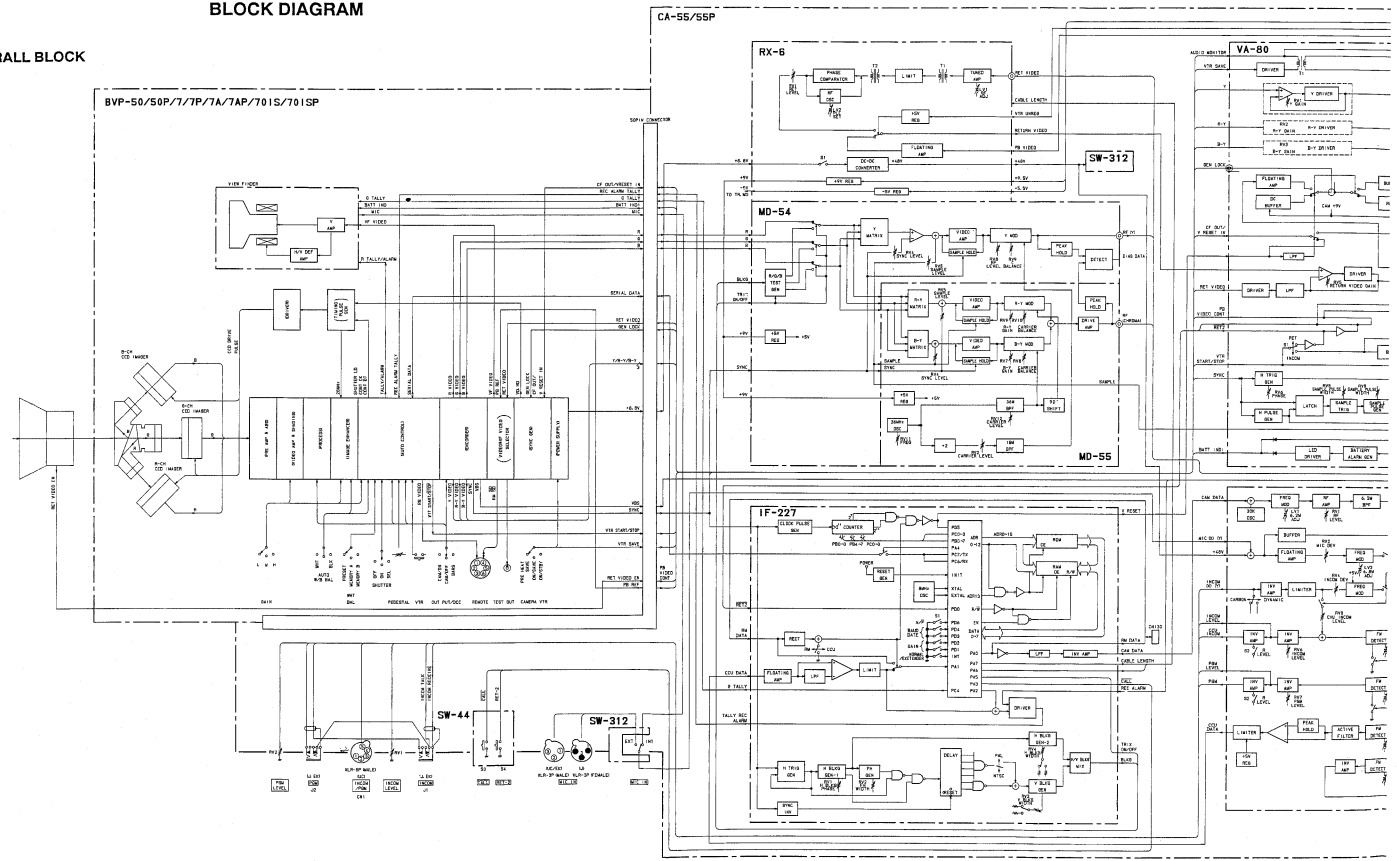
Adjust :
- ⊘RV3 (SIDE TONE) is an adjustment control for the sound balance for intercommunication. Set the SIDE TONE control so that the sound level is satisfactory.
- Perform the ⊘RV4 (CANCEL) adjustment when the intercom is "RTS" or "2-wires". In this adjustment, returned own voice level to the CCU other than side tone minimize.



AU-98 BOARD (Component Side)

SECTION A
BLOCK DIAGRAM

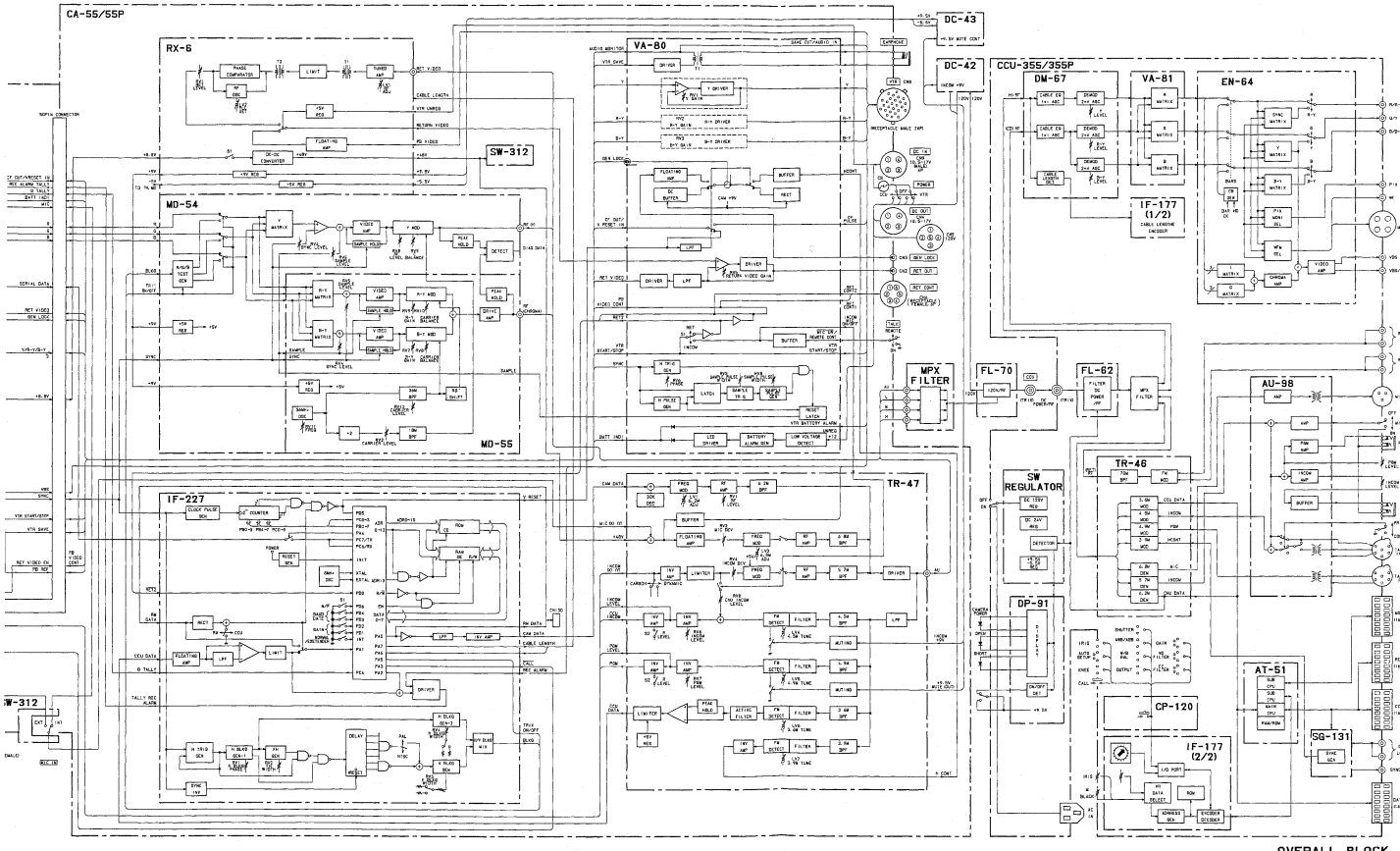
OVERALL BLOCK



CCU-355 (UCJ)
CCU-355P (EK)

A-1 (a)

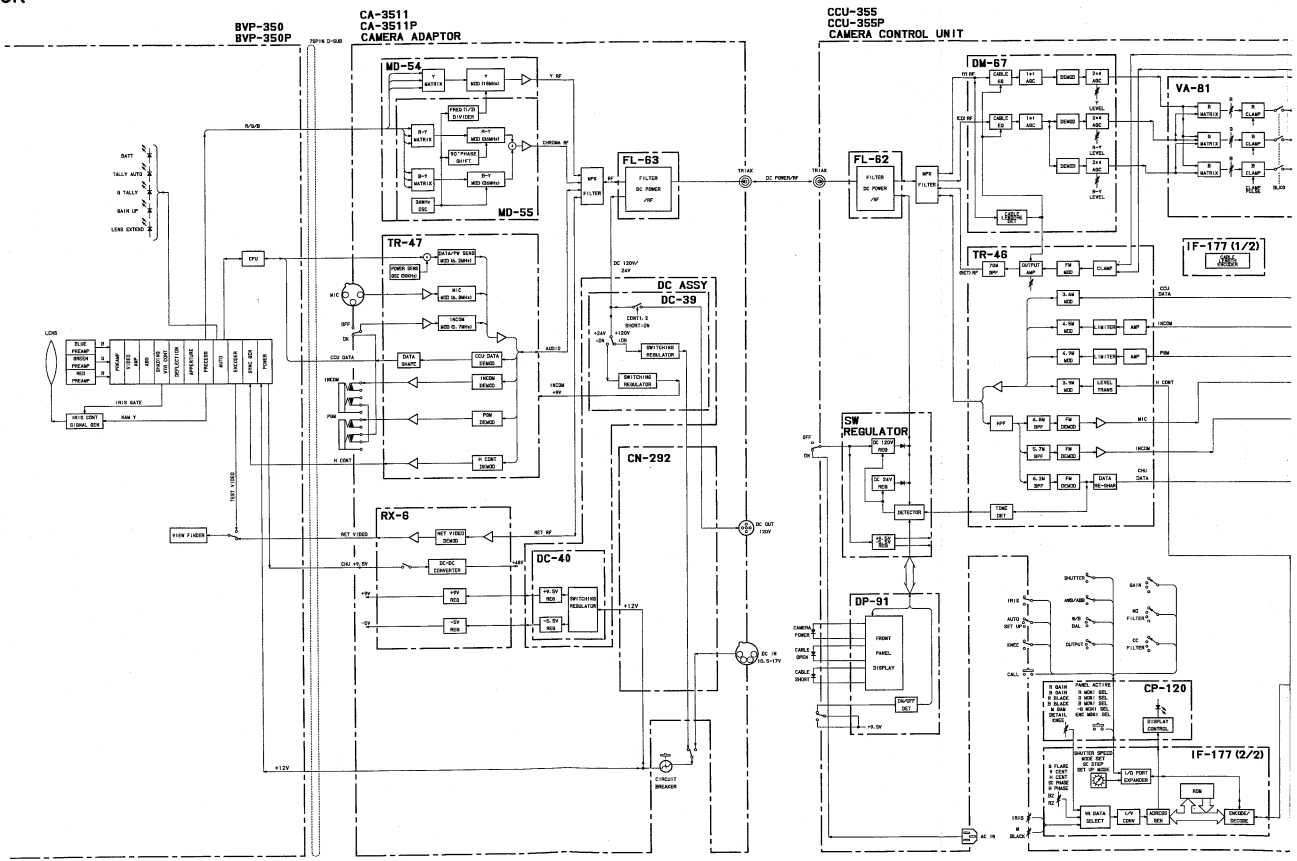
A-2 (a)

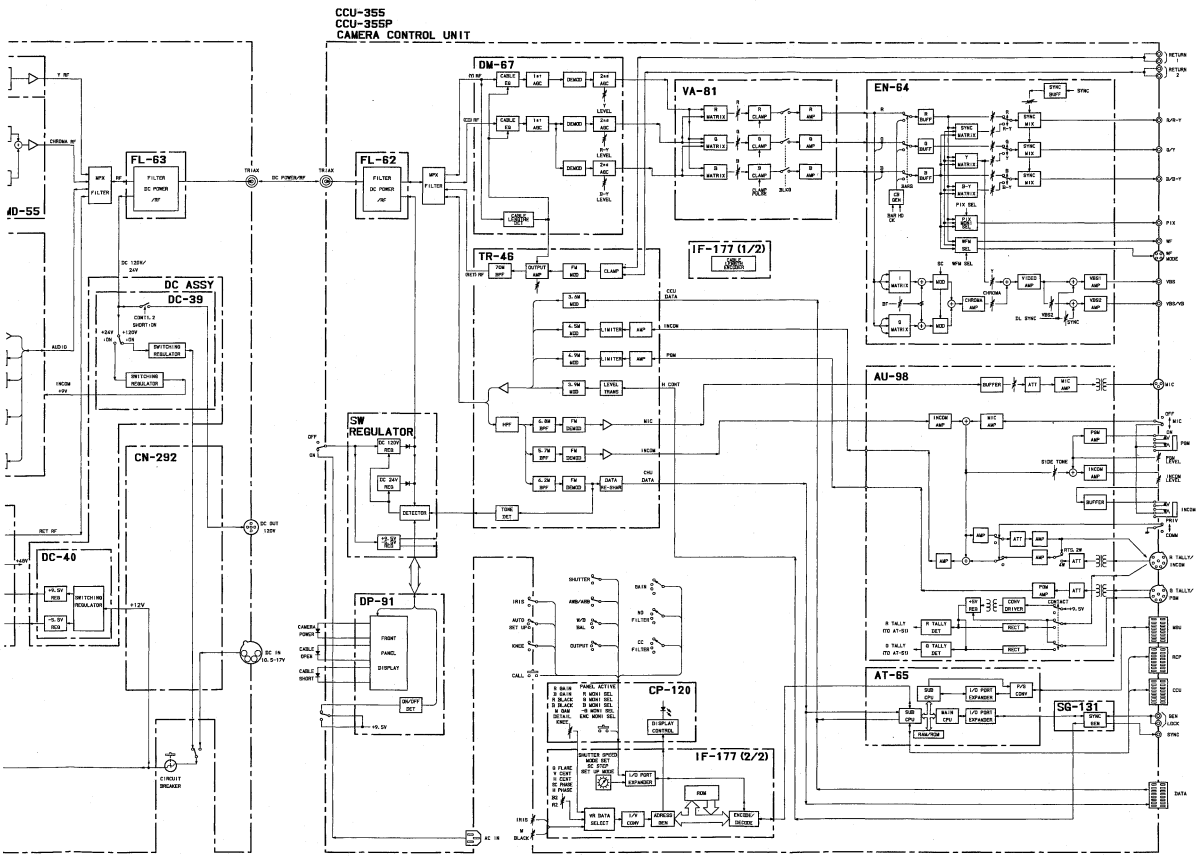

CA-55/55P
RX-6
SW-312
MD-54
MD-55
VA-80
DC-43
DC-42
CCU-355/355P
DM-67
VA-81
EN-64
IF-177 (1/2)
IF-177 (2/2)
MPX FILTER
FL-70
FL-62
SW REGULATOR
TR-46
TR-47
IF-227
DP-91
AU-98
AT-51
CP-120
SG-131
OVERALL BLOCK
(CA-55/55P)
CCU-355 (UC)
CCU-355P (EK)

A-2 (a)

A-3 (a)

OVERALL BLOCK

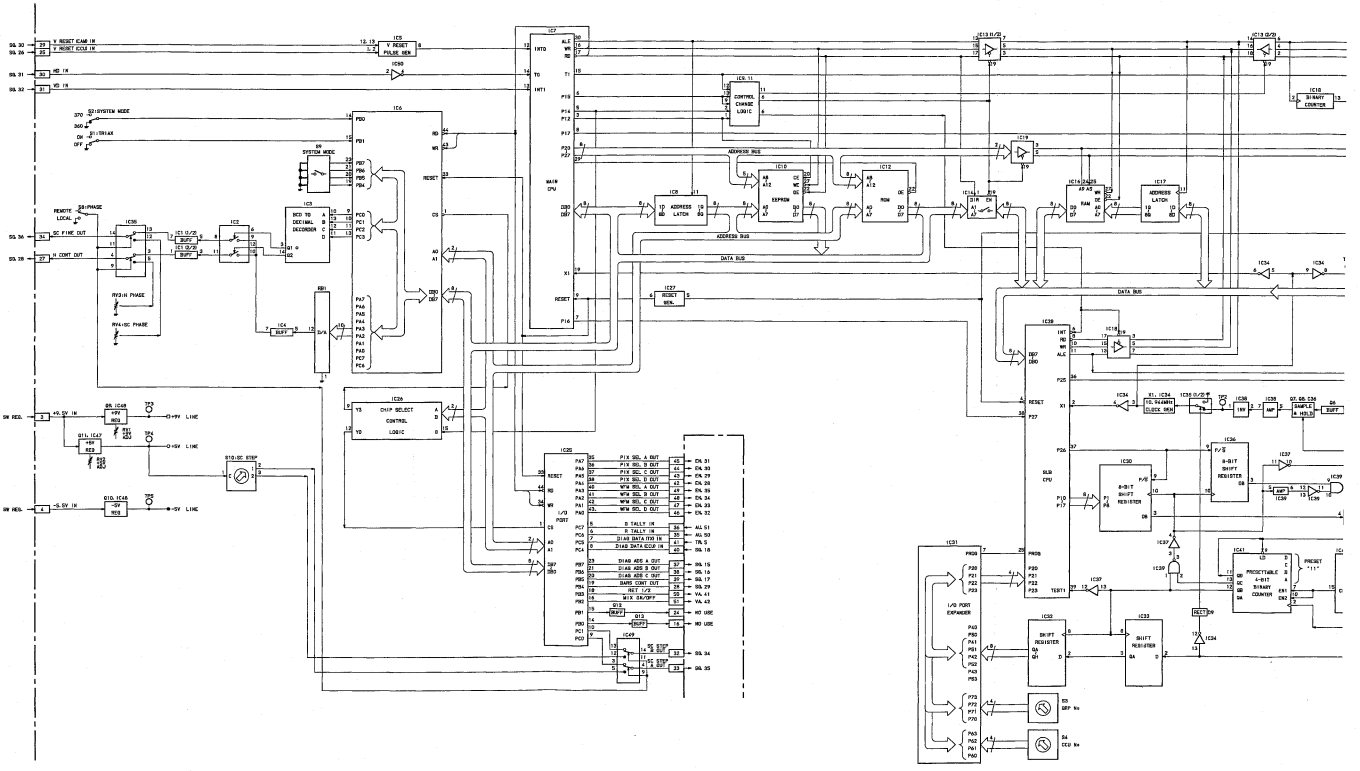




OVERALL BLOCK
CCU-355 (UC, J)
CCU-355P (EK)

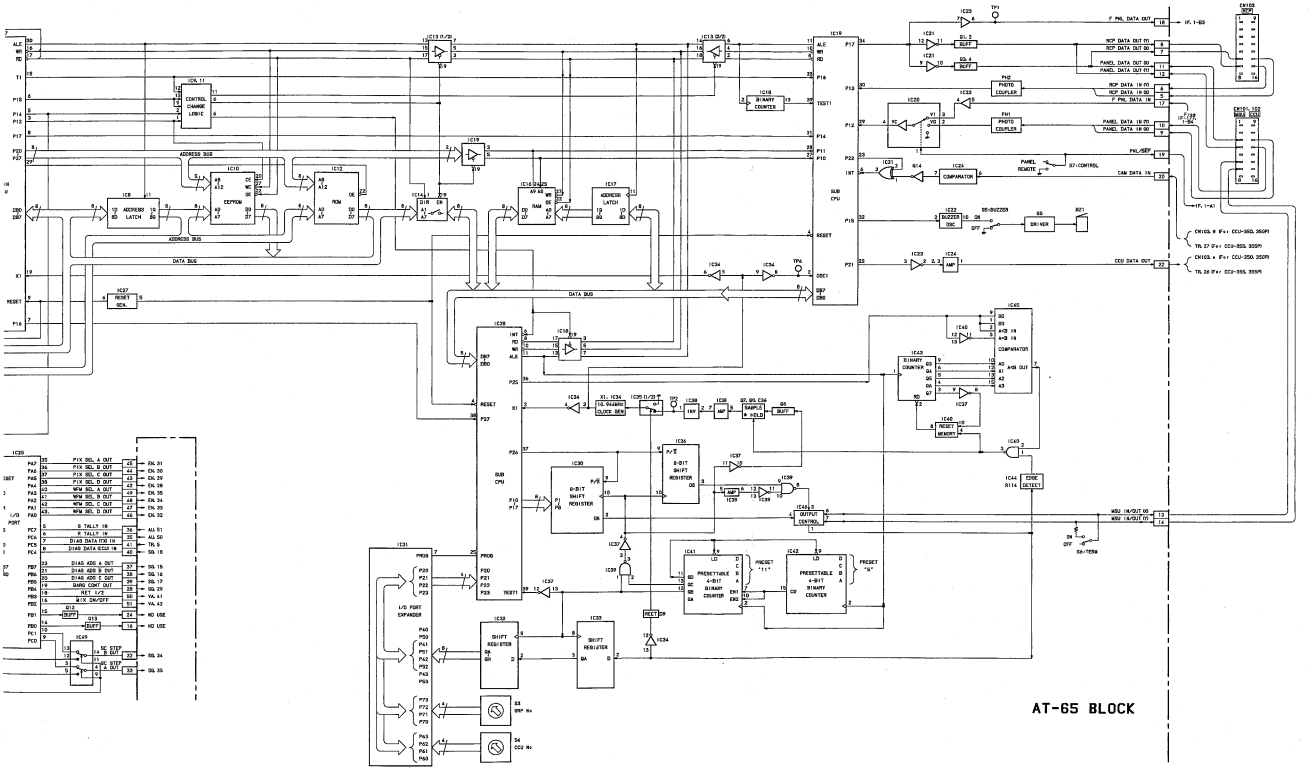
AT-65 BLOCK DIAGRAM

AT-65 BLOCK DIAGRAM AT-65

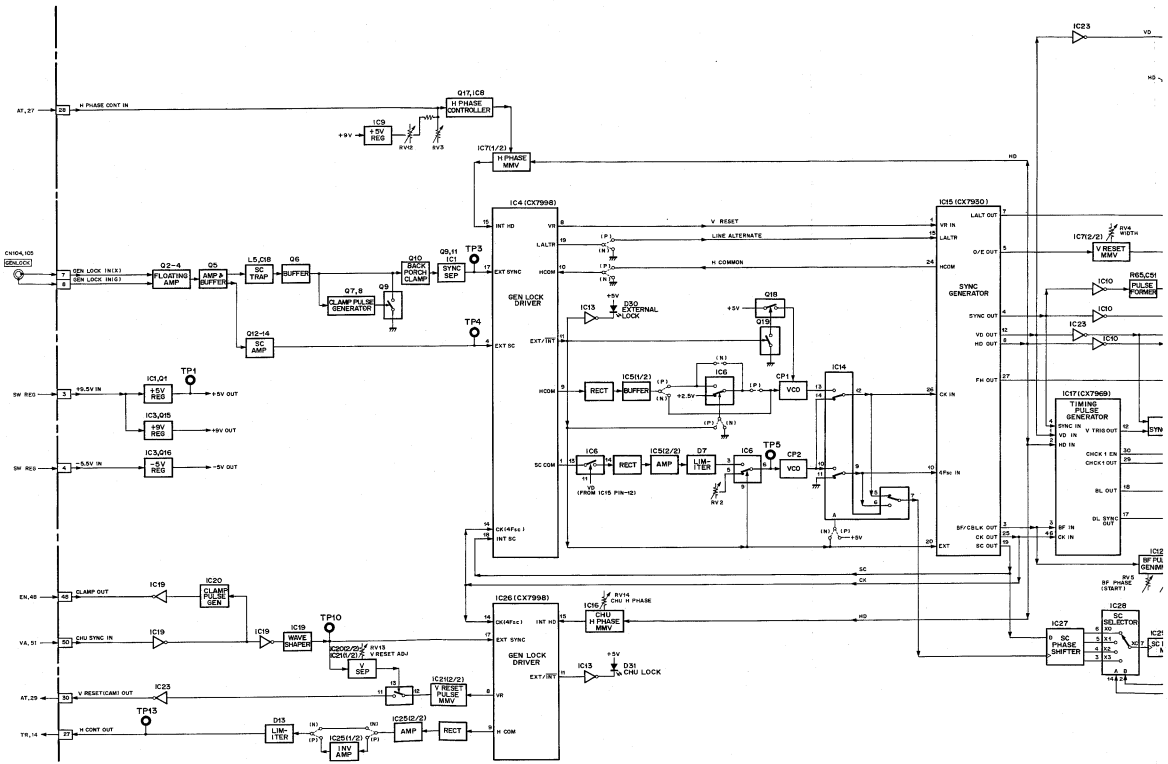


AT-65 BLOCK DIAGRAM

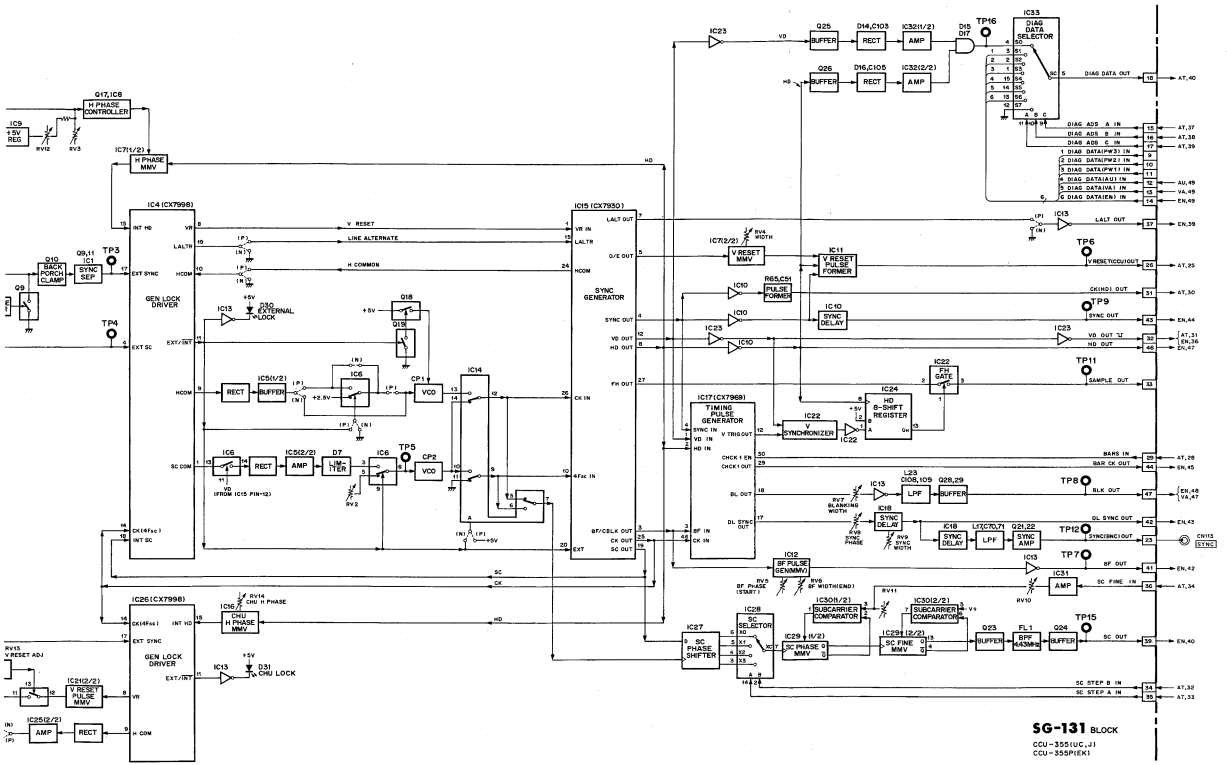
AT-65 BLOCK DIAGRAM



SG-131 BLOCK DIAGRAM

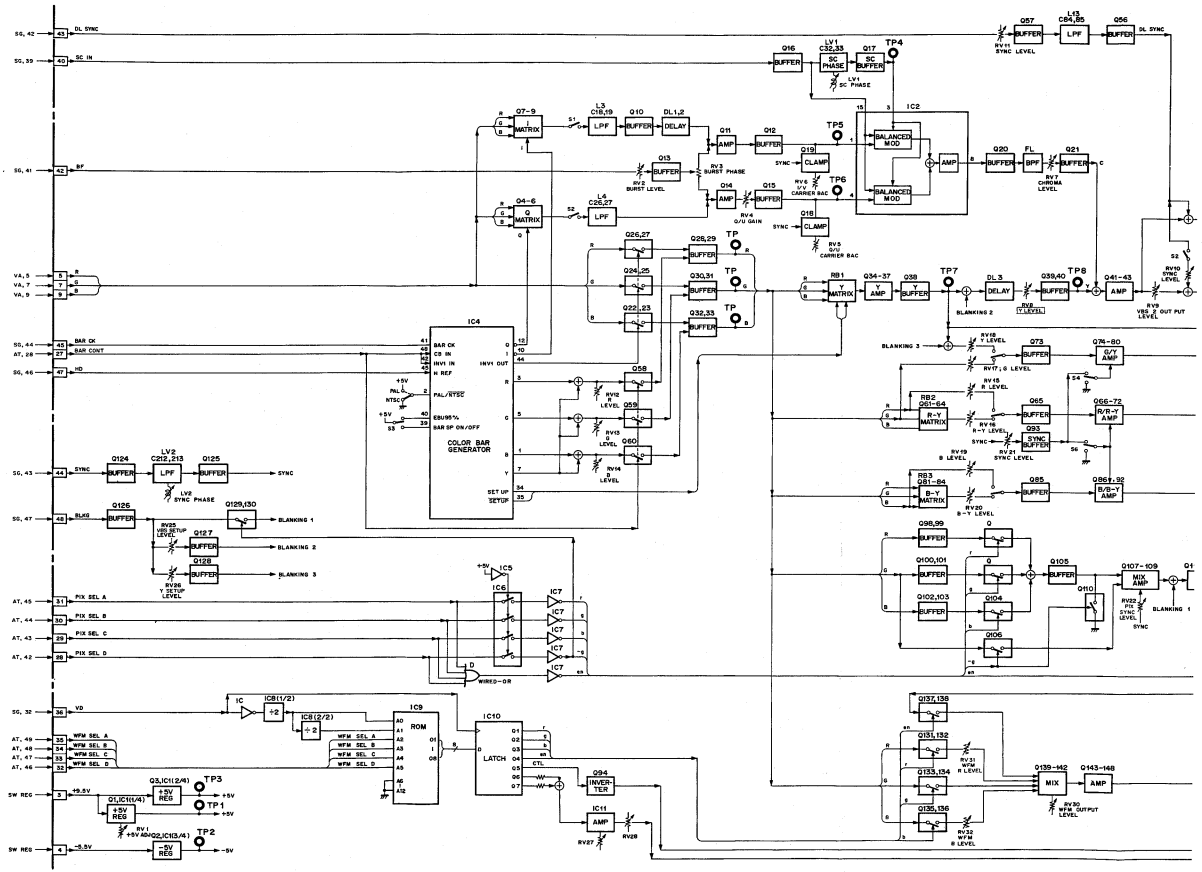


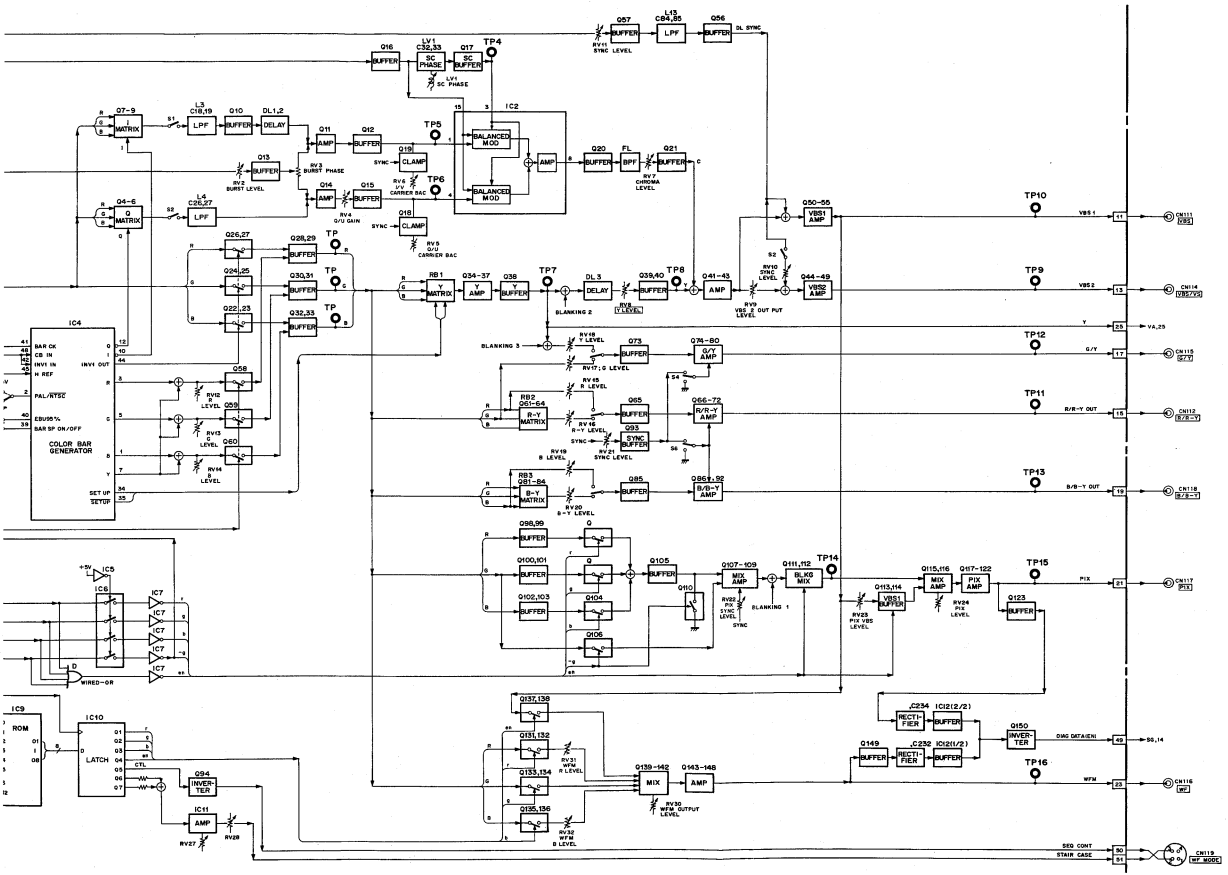
SG-131 BLOCK DIAGRAM



EN-64 BLOCK DIAGRAM

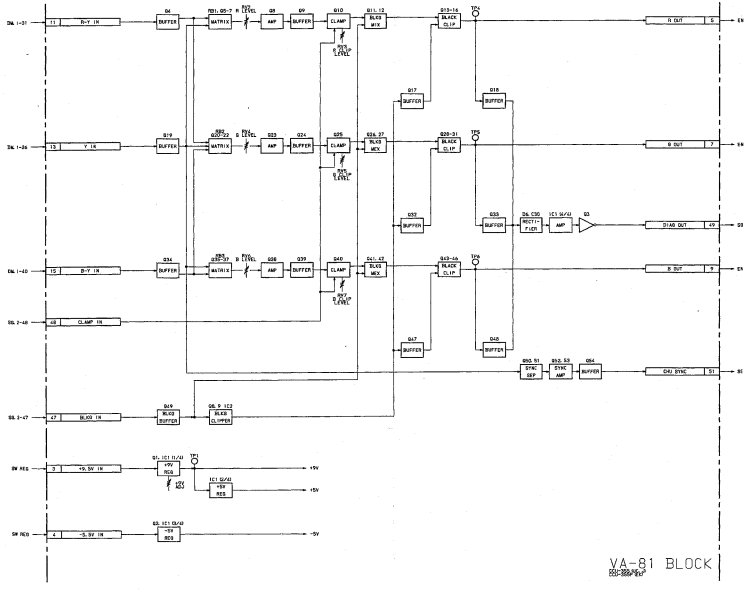
EN-64 BLOCK DIAGRAM EN-64

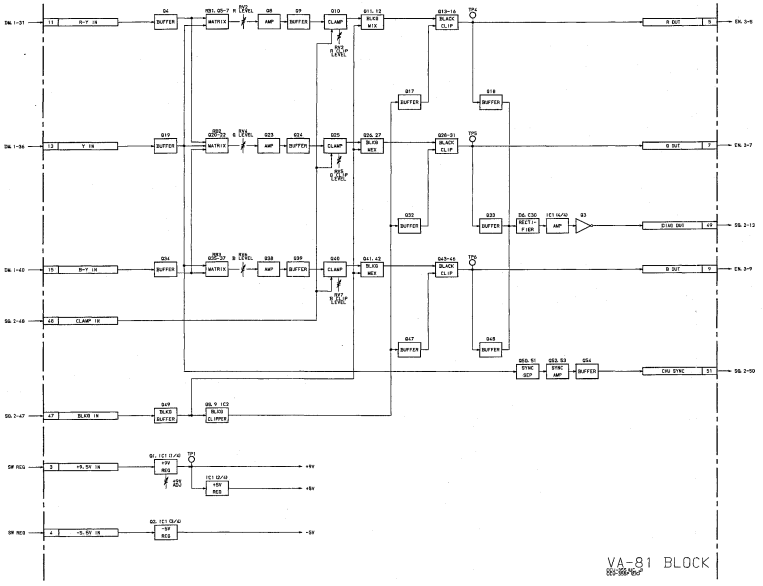




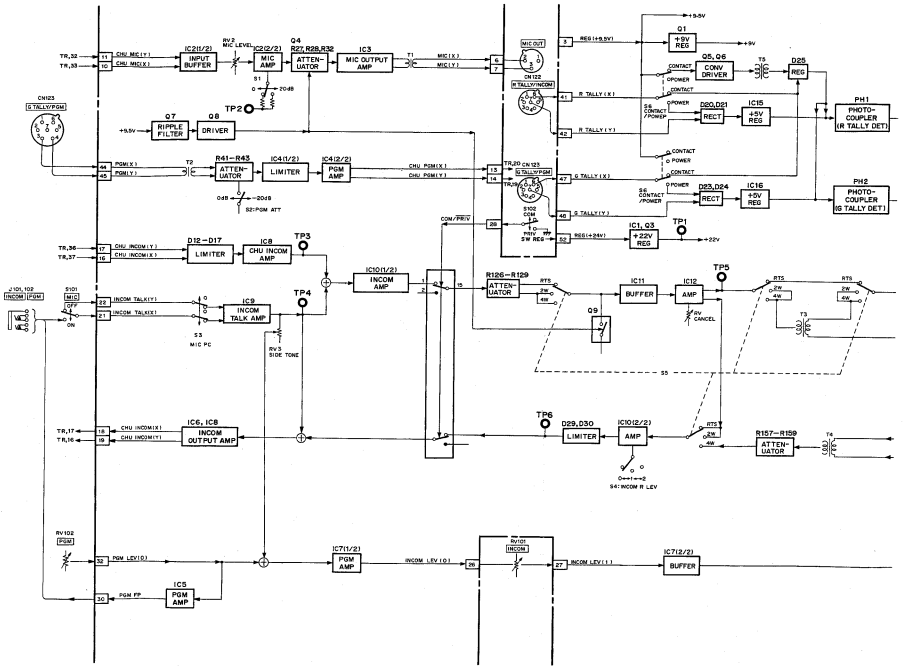
EN-64 BOARD
CCU-355(UC,J)
CCU-355P(EK)

VA-81 BLOCK

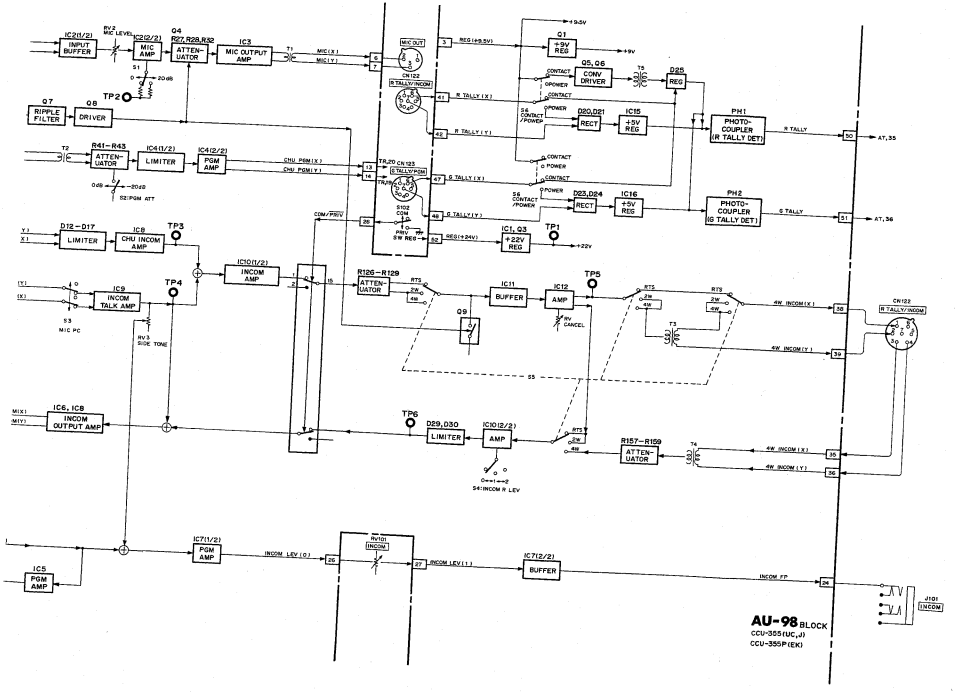



VA-81 BLOCK

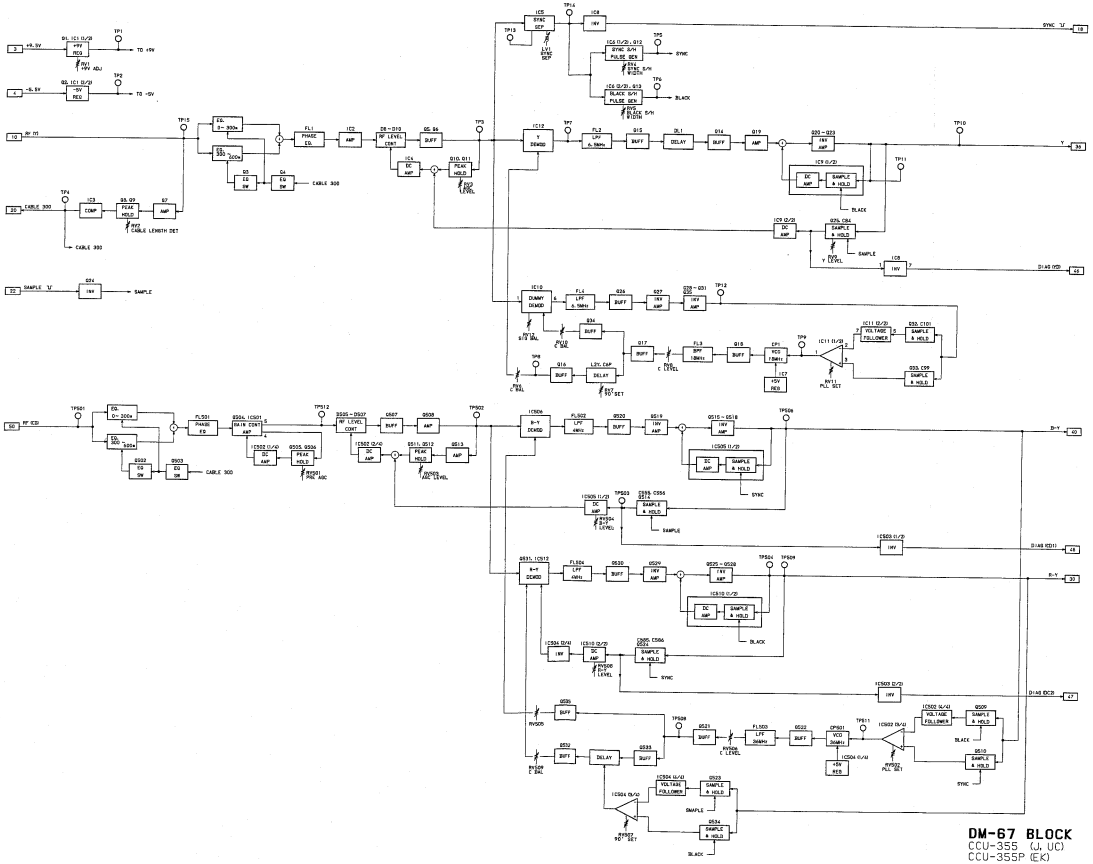
AU-98 BLOCK DIAGRAM



AU-98 BLOCK DIAGRAM



DM-67 BLOCK



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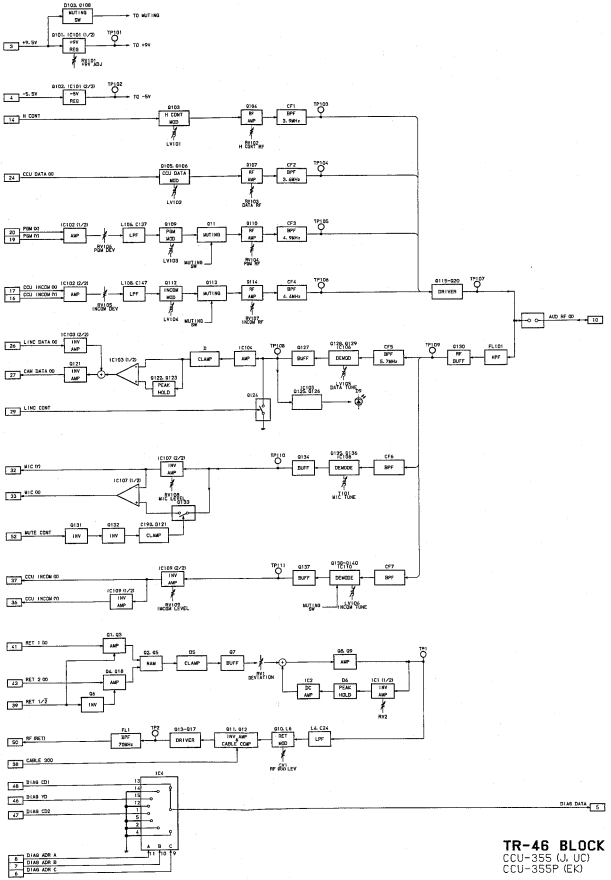
TR-46 BLOCK



TR-46 BLOCK
CCU-355 (J, UC)
CCU-355P (EK)

SONY-SP01632 / DRUCK: 16

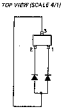
SECTION B
SEMICONDUCTOR

The circuit diagram of IC is obtained from the IC data book published by the manufacturer.

TYPE	PAGE
1S1555	B-2
1S2835	B-2
1S2837	B-2
1T33	B-2
1SS123	B-2
1SS238	B-2
1SS97	B-2
1SV34	B-2
1SZ??	B-2
1SZ46A	B-2
27C64-25	B-8
2SA1037K	B-2
2SA1122	B-2
2SA1226	B-2
2SA1385	B-2
2SA1459	B-2
2SA1462	B-2
2SA812	B-2
2SB733	B-2
2SC1009A	B-2
2SC1623	B-2
2SC1730	B-2
2SC2026	B-2
2SC2714	B-2
2SC2753	B-2
2SC2757	B-2
2SC2758	B-2
2SC3052	B-2
2SC945	B-2
2SD773	B-2
2SD774	B-2
2SK184	B-2
2SK523	B-2
2SK94	B-2
3SK163	B-2
AM26LS30PC	B-3
BX1082	B-3
CX20183	B-3
CX22017	B-4
CX7968A	B-5
CX7969	B-5
CXD1216M	B-8
CXD1217M	B-4
CXK58257AM-10L	B-19
CXK58257M-10L	B-19
DTA143XK	B-19
DTC114EK	B-2
DTC143XK	B-2
ER881-004	B-2
FC52M	B-2
FC53M	B-2
GL-9HY10	B-2
HA12412	B-8
HN27C64G	B-8
LT-9220D	B-2
MB3761PF	B-8
MC14001BF	B-11
MC14011BF	B-11
MC14013BF	B-11
MC14014BF	B-8
MC14016BF	B-11
MC14024BF	B-11
MC14028BF	B-21
MC14040BF	B-12
MC14051BF	B-12
MC14053BF	B-12
MC14070BF	B-12
MC14532BF	B-9
MSM80C154RS	B-19
MSM80C49-830RS	B-20
MSM80C49-831RS	B-20
MSM80C49-884RS	B-20
MSM80C49GS	B-9
MSM82C55A-2GS	B-20
NJM567M	B-18
PS2002B	B-2
PS2604	B-2
RC1496M	B-10
RC4558M	B-10
RC4556MA	B-10
RC78L05A	B-10
RD??EB?	B-2
RD??EL?	B-2
SN74HC00ANS	B-15
SN74HC04ANS	B-15
SN74HC158NS	B-15
SN74HC175ANS	B-15
SN74HC386NS	B-20
SN74HC85NS	B-16
SN74LS123NS	B-10
SN74LS221NS	B-11
SN75176BP	B-21
SPR-54MVW	B-2
TA7303P	B-11
TC4016BFHB	B-11
TC4020BP	B-11
TC4024BF	B-11
TC4028BF	B-21
TC4050BF	B-12
TC40H000F	B-13
TC40H002F	B-13
TC40H004F	B-13
TC40H008F	B-13
TC40H139F	B-13
TC40H151F	B-13
TC40H157F	B-13
TC40H163F	B-13
TC40H164F	B-14
TC40H244F	B-14
TC40H245F	B-14
TC40H373F	B-14
TC40H374F	B-14
TC4SU69F	B-14
TC5517AFL	B-15
TC74HC153F	B-15
TC74HC221AF	B-15
TC74HC85F	B-16
TC7S04F	B-21
TL062CPS	B-16
TL064CNS	B-16
TL082CPS	B-16
TL1451CNS	B-16
TL7700CP	B-16
TL7705CPS-B	B-21
TLP651	B-17
TLUG163	B-2
TMS27C512-20JL	B-21
UPD28C64C-20	B-22
uPC1663G	B-17
uPC311G2	B-17
uPC358G2	B-17
uPC393G2	B-17
uPD82C43G	B-17
uPD8749HD	B-18

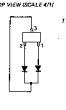
1S1555
1S5338
1S1554

TOP VIEW (SCALE 4/1)



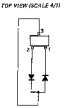
1S2835

TOP VIEW (SCALE 4/1)



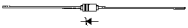
1S2837

TOP VIEW (SCALE 4/1)



1S3123

1S397
1N81-004



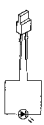
1S2462A

1SZ 7)
RD 7 YEB)
RD 7 YEL 7

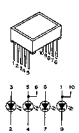
58-1

1T33

FC52M
FC53M

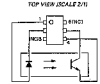


GL-5H11G; YELLOW

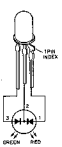


LT-922GD ; RED

TOP VIEW (SCALE 2/1)



PS2002B
PS2004

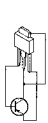


SPR-54MWW

TLUG183 ; GREEN

TOP VIEW (SCALE 4/1)

2SA1037K
2SA1132
2SA1238
2SA1462
2SA812



2SA1385

2SA1459

2SB733

TOP VIEW (SCALE 4/1)

2SC1009A
2SC1623
2SC114
2SC1757
2SC1758
2SC3052

2SC1730
2SC945

2SD2025
2SD2753

2SD773
2SD774

2SK184

2SK523

TOP VIEW (SCALE 4/1)

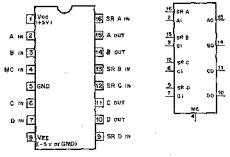
3SK94

3SK163

TOP VIEW (SCALE 4/1)

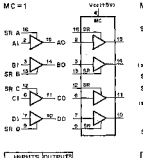
DTC114EK (R1 = 10K, R2 = 10K)
DTC143XX (R1 = 4.7K, R2 = 10K)

AM26LS30PC (ADVANCED MICRO DEVICES)
LINE DRIVER
— TOP VIEW —

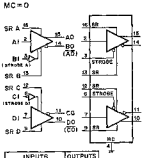


MC : MODE CONTROL
SR : SLEW RATE CONTROL

MC = 1



MC = 0

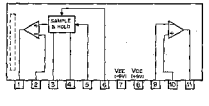


INPUTS		OUTPUTS	
MC	A TO D	A TO D	
1	0	0	
1	1	1	

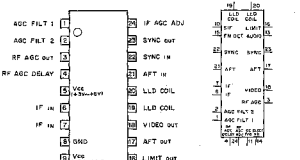
0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE
HI-Z : HIGH IMPEDANCE

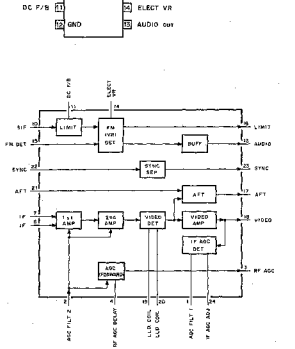
INPUTS			OUTPUTS	
MC	STROBE	A	O/A	B	O/B
0	0	0	0	1	
0	0	1	1	0	
0	1	X	HI-Z	HI-Z	

BX1062 (SONY)
OPERATIONAL AMPLIFIER
— REAR VIEW —

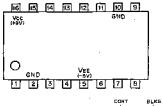


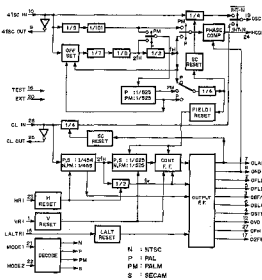
CX20183 (SONY) FLAT PACKAGE
TV VIDEO SIGNAL PROCESSOR
— TOP VIEW —





CX22017 (SONY)
VIDEO SIGNAL PROCESSOR
— TOP VIEW —

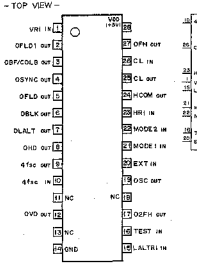


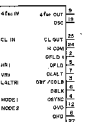


INPUT
4fSC IN : 4fSC INPUT
CL IN : CLOCK INPUT
EXT : SYNC MODE SELECT
(L : INTERNAL,"H : EXTERNAL)
HRI : H RESET
LALTRI : LINE CHANGE RESET
MODE 1,2 : SYSTEM SELECT
VRI : V RESET

OUT PUT
4fSC OUT : 4fSC OUTPUT
CL OUT : CLOCK OUTPUT
HCOM : PHASE COMPARATOR
CDRH : 2FH OUTPUT
OBF/COLB : BURST FLAG/COLOR BLANKING
OBLK : COMPOSITE BLANKING
OFH : H FREQUENCE
OFLD : EVEN, ODD
OHD : H DRIVE
OVD : V DRIVE
OLALT : LINE CHANGE
OSC : SUBCARRIER
OSYNC : COMPOSITE SYNC
OVD : V DRIVE

CXD1217M (SONY) FLAT PACKAGE
CMOS SYNC GENERATOR
– TOP VIEW –

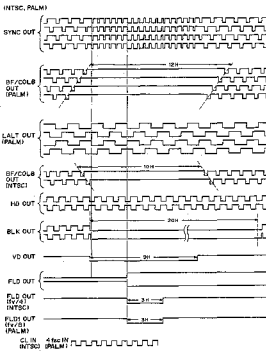


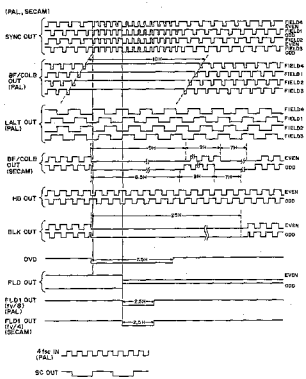


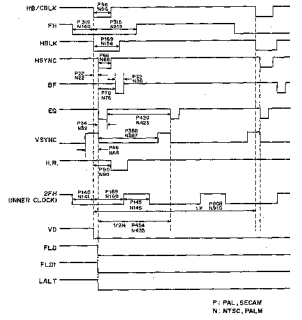
SYSTEM	4fsc	CLOCK
NTSC	910fH	910fH
PAL	1135fH±2%	909fH
PALM	909fH	910fH
SECAM	—	909fH

INPUT MODE 1	INPUT MODE 2	SYSTEM
0	0	NTSC
0	1	SECAM
1	0	PALM
1	1	PAL

0 : LOW LEVEL
1 : HIGH LEVEL

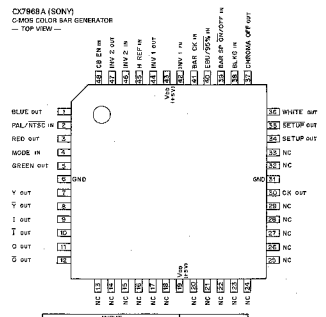


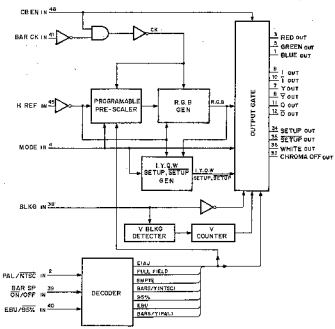




P: PAL, SECAM
N: NTSC, PALM

CX7968A (SONY)
C-MOS COLOR BAR GENERATOR
— TOP VIEW —

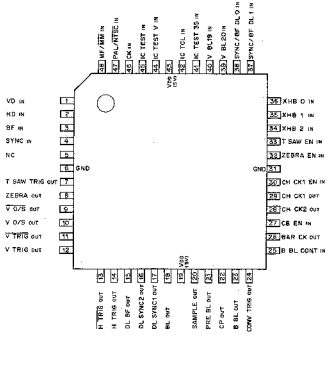




INPUT				FUNCTION
PAL/NTSC	MODE	EBU/75%	BAR SP	
0	0	0	0	EIAJ COLOR BAR
0	0	0	1	FULL FIELD COLOR BAR
0	0	1	0	INHIBIT
0	0	1	1	INHIBIT
0	1	0	0	EIAJ COLOR BAR
0	1	0	1	FULL FIELD COLOR BAR
0	1	1	0	SMPTE COLOR BAR
0	1	1	1	COLOR BAR + Y BAR
1	0	0	0	75% COLOR BAR
1	0	0	1	INHIBIT
1	0	1	0	EBU COLOR BAR
1	0	1	1	INHIBIT
1	1	0	0	75% COLOR BAR
1	1	0	1	COLOR BAR + Y BAR
1	1	1	0	EBU COLOR BAR
1	1	1	1	INHIBIT

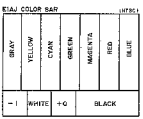
0 : LOW LEVEL
1 : HIGH LEVEL

CX7968 (SONY)
C-MOS PULSE GENERATOR
— TOP VIEW —

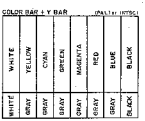


G COLOR BAR PATTERN

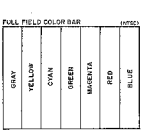
EIAJ COLOR BAR (NTSC)



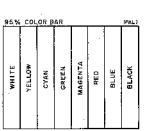
COLOR BAR + Y BAR (PAL) (NTSC)



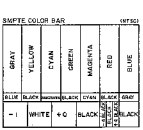
FULL FIELD COLOR BAR (NTSC)



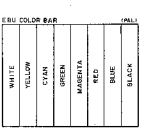
75% COLOR BAR (PAL)



SMPTE COLOR BAR (NTSC)



EBU COLOR BAR (PAL)



1. SYSTEM DESIGNATION

INPUT PAL/NTSC IN	SYSTEM
1	PAL, SECAM
0	NTSC, PAL-M

2. TYPE OF TUBE

INPUT SNC/MAG IN	FUNCTION
1	SNAG-STA TUBE
0	M&G-MAG TUBE

3. V BLKG WIDTH (NTSC ONLY)

INPUT V BL 19	INPUT V BL 20	V BLKG WIDTH
1	X	19 H
0	1	20 H
0	0	21 H

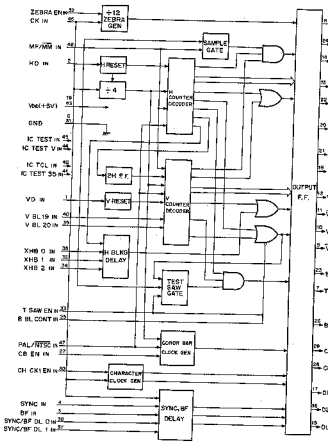
4. H BLKG WIDTH

INPUT XHB0	INPUT XHB1	INPUT XHB2	BLKG WIDTH (µS) NTSC	PAL
1	1	1	10.27	11.49
1	1	0	10.54	11.56
1	0	1	10.41	11.83
1	0	0	10.48	11.70
0	1	1	10.55	11.77
0	1	0	10.62	11.84
0	0	1	10.69	11.91
0	0	0	10.76	11.98

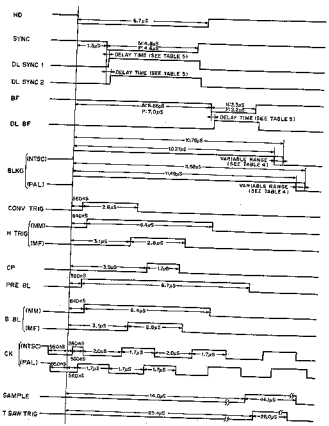
5. DELAY TIME

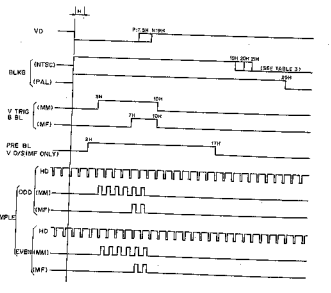
INPUT SYNC/BF DL	INPUT BLKG/BF DL	DELAY TIME (nS) DL SYNC 1	DL SYNC 2	DL BF
1	1	140	210	140
1	0	210	280	210
0	1	630	700	630
0	0	700	770	700

1: HIGH LEVEL
0: LOW LEVEL
X: DON'T CARE



CX-7909 (1/2)



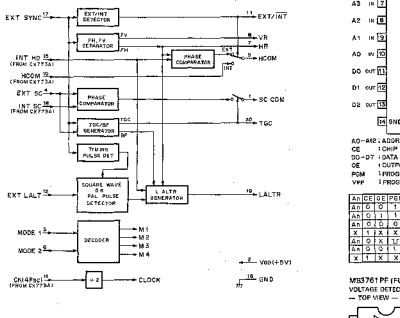


CXD1216M (SONY) FLAT PACKAGE
CMOS GENLOCK DRIVER FOR CX773A
– TOP VIEW –

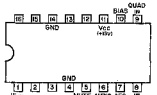
INPUTS MODE 1	INPUTS MODE 2	EXT LOCK MODE
0	0	M 1
1	0	M 2
0	1	M 3
1	1	M 4

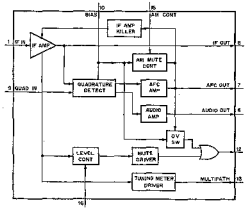
PAL:VSS
PAL:MCVSS
PAL/VS/SC/LALT
SECAM/DS/SC/LALT
NTSC:VSS
NTSC:VS/SC
PAL:MCVS/SC/LALT

0: LOW LEVEL
1: HIGH LEVEL

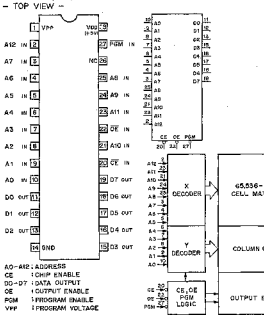


HA12412 (HITACHI)
FM IF SYSTEM
– TOP VIEW –





HN27C64G-20 (HITACHI) (ACCESS TIME = 200nS)
27C64-25 (NEC)
CMOS 64K (8K-8) ERASABLE PROM WITH 3-STATE OUTPUTS
– TOP VIEW –

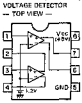


A0–A12 : ADDRESS
CE : CHIP ENABLE
O0–O7 : DATA OUTPUT
OE : OUTPUT ENABLE
PGM : PROGRAM ENABLE
VPP : PROGRAM VOLTAGE

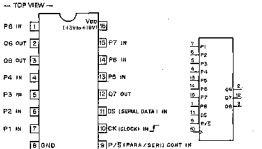
	CE	OE	PGM	VPP	Do	FUNCTION
A0	0	0	1	+5V	D OUT	READ
A1	0	1	1	+5V	Hi-Z	OUTPUT DISABLE
A2	0	0	0	+5V	Hi-Z	OUTPUT DISABLE
X	1	X	X	+5V	Hi-Z	STANDBY
A3	0	1	0	+12V	Din	PGM
A4	0	0	1	+12V	D OUT	PGM VERIFY
X	1	X	X	+12V	Hi-Z	PGM INH

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
Hi-Z: HIGH IMPEDANCE

M53761P (FUJITSU) FLAT PACKAGE
VOLTAGE DETECTOR
– TOP VIEW –

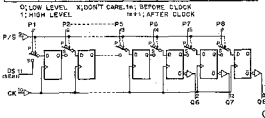


MC14014BF (MOTOROLA) FLAT PACKAGE
CMOS SYNCHRONOUS SERIAL/PARALLEL 8-BIT STATIC SHIFT-REGISTER
– TOP VIEW –

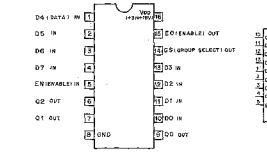


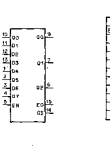
TRUTH TABLE												
	INPUTS					INTERNAL OUTPUTS				OUTPUTS		
P/S CONT	CK	P		DS	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
↑	↑	P1–P8		X	P1	P2	P3	P4	P5	P6	P7	P8
0	↑	X		↑	1	Q1n	Q2n	Q3n	Q4n	Q5n	Q6n	Q7n
0	↓	X		0	0	Q1n	Q2n	Q3n	Q4n	Q5n	Q6n	Q7n
X	0	X		X	Q1n	Q2n	Q3n	Q4n	Q5n	Q6n	Q7n	Q8n

0: LOW LEVEL X: DON'T CARE tn: BEFORE CLOCK
1: HIGH LEVEL ↑(↓): AFTER CLOCK



MC14532BF (MOTOROLA) FLAT PACKAGE
C-MOS 8-BIT PRIORITY ENCODER
— TOP VIEW —

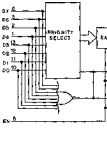




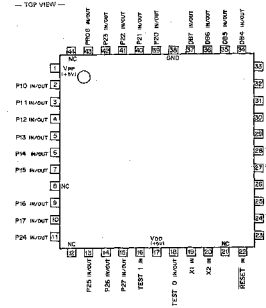
D7 IS THE HIGHEST PRIORITY

INPUTS								OUTPUTS			
EN	D7	D6	D5	D4	D3	D2	D1	D0	GS	Q1	Q0
0	X	X	X	X	X	X	X	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
1	1	X	X	X	X	X	X	1	1	1	1
1	0	1	X	X	X	X	X	1	1	1	0
1	0	0	1	X	X	X	X	1	1	0	1
1	0	0	0	1	X	X	X	1	1	0	0
1	0	0	0	0	1	X	X	1	0	1	1
1	0	0	0	0	0	1	X	1	0	1	0
1	0	0	0	0	0	0	1	1	0	0	1

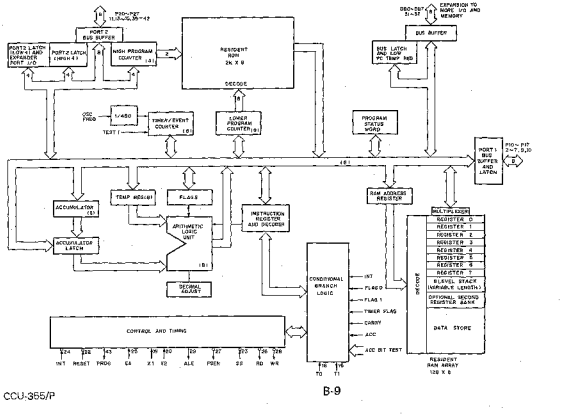
1 = HIGH LEVEL
0 = LOW LEVEL
X = DON'T CARE

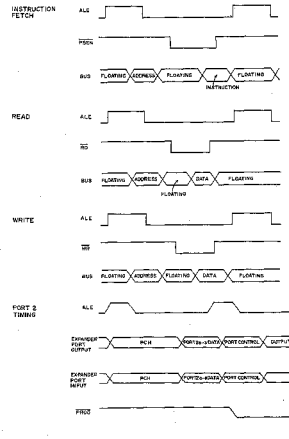


MSM80C49GS (OKI) FLAT PACKAGE
C-MOS 8-BIT MICROPROCESSOR
— TOP VIEW —



ALE	; ADDRESS LATCH ENABLE
DB0 ~ 7	; DATA BUS
EA	; EXTERNAL ACCESS
INT	; INTERRUPT
P20 ~ 27	; I/O PORT 2
P10 ~ 17	; I/O PORT 1
PROG	; PROGRAM PULSE
PSEN	; PROGRAM STORE ENABLE
RD	; READ
RESET	; INITIALIZING IN
SS	; SINGLE STEP
T0	; TEST 0 I/O
T1	; TEST 1 IN
VDD	; +5V
VSS	; +5V FOR INTERNAL DATA MEMORY
WR	; WRITE
X1, X2	; CRYSTAL OSC

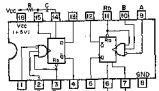




RC78L05A (RAYTHEON) + 5V
POSITIVE VOLTAGE REGULATOR (100mA)

NJM4558M (JRC) FLAT PACKAGE
RC4558M (RAYTHEON) FLAT PACKAGE
OPERATIONAL AMPLIFIER
– TOP VIEW –

SN74LS123NS (TI) FLAT PACKAGE
TTL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR WITH DIRECT RESET
– TOP VIEW –

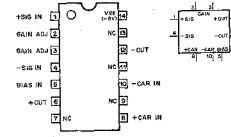


INPUTS			OUTPUTS	
CLR	A	B	Q	Q
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	↑	⊓	⊔
1	↓	1	⊓	⊔
1	0	↓	⊓	⊔

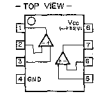
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

OUTPUT PULSE WIDTH

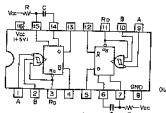
RC1496M (RAYTHEON) FLAT PACKAGE
NJM1496M (JRC) FLAT PACKAGE
BALANCED MODULATOR/DEMODULATOR
– TOP VIEW –



NJM4558M-A (JRC) FLAT PACKAGE
RC4558M-A (RAYTHEON) FLAT PACKAGE
OPERATIONAL AMPLIFIER
– TOP VIEW –



SN74LS221NS (TI) FLAT PACKAGE
TTL MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT
— TOP VIEW —

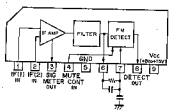


INPUTS			OUTPUTS	
Rx	A	B	Q	Q
0	X	X	C	1
X	1	X	C	1
X	X	0	C	1
1	0	↑	↑	↓
1	↓	1	↑	↓
↑	0	↑	↑	↓

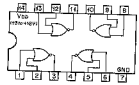
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

OUTPUT PULSE WIDTH = 0.7CR

TA7303F (TOSHIBA)
FM IF AMPLIFIER/DETECTOR
— SIDE VIEW —



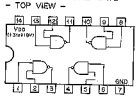
MC14001BF (MOTOROLA) FLAT PACKAGE
C-MOS 2-INPUT NOR GATE
— TOP VIEW —



A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

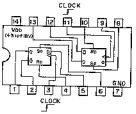
MC14011BF (MOTOROLA) FLAT PACKAGE
C-MOS 2-INPUT NAND GATE
— TOP VIEW —



A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

MC14013BF (MOTOROLA) FLAT PACKAGE
C-MOS D-TYPE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —



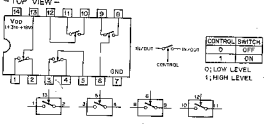
DIRECT SET/ FLIP-FLOP	
SD(RD)	Q
0	0
0	1
1	0
1	1

D-TYPE FLIP-FLOP	
CK↑	Q=Q
0	0
1	1
↓	Q

CLOCK CK↓ : Q=Q BEFORE CLOCK
CK↑ : Q=D AFTER CLOCK

0 ; LOW LEVEL
1 ; HIGH LEVEL

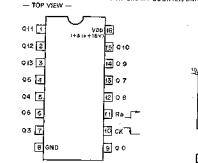
HC14016BF (MOTOROLA) FLAT PACKAGE
TC4016BFHB (TOSHIBA) FLAT PACKAGE
C-MOS BILATERAL ANALOG SWITCH
— TOP VIEW —



CONTROL	SWITCH
0	OFF
1	ON

0 ; LOW LEVEL
1 ; HIGH LEVEL

TC4020BF (TOSHIBA) FLAT PACKAGE
C-MOS 14-STAGE RIPPLE-CARRY BINARY COUNTER/DRIVER
— TOP VIEW —

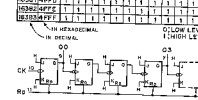


RD	Q13~Q0
1	ALL LOW
0	COUNT

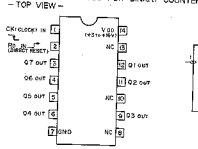
COUNT	BINARY OUTPUTS													
	Q13	Q12	Q11	Q10	Q9	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
0	0000	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0001	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0002	0	0	0	0	0	0	0	0	0	0	0	1	0
3	0003	0	0	0	0	0	0	0	0	0	0	0	1	1
4	0004	0	0	0	0	0	0	0	0	0	0	1	0	0
16380	4FFC	1	1	1	1	1	1	1	1	1	1	1	1	0
16381	4FFD	1	1	1	1	1	1	1	1	1	1	1	0	1
16382	4FFE	1	1	1	1	1	1	1	1	1	1	1	1	0
16383	4FFF	1	1	1	1	1	1	1	1	1	1	1	1	1

IN HEXADECIMAL
IN DECIMAL

0 ; LOW LEVEL
1 ; HIGH LEVEL

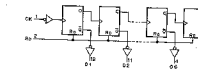


MC14024BF (MOTOROLA) FLAT PACKAGE
TC4024BF (TOSHIBA) FLAT PACKAGE
C-MOS ASYNCHRONOUS 7-BIT BINARY COUNTER
— TOP VIEW —

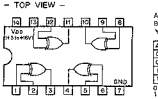


COUNT	INPUTS		OUTPUTS							
	CK	R	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
0	↓	1	0	0	0	0	0	0	0	0
1	↓	0	0	0	0	0	0	0	0	1
2	↓	0	0	0	0	0	0	0	1	0
3	↓	0	0	0	0	0	0	0	1	1
4	↓	0	0	0	0	0	0	1	0	0
125	↓	0	1	1	1	1	1	0	1	
126	↓	0	1	1	1	1	1	1	0	
127	↓	0	1	1	1	1	1	1	1	
→	↓	0	0	0	0	0	0	0	0	
—	↑	0	NO CHANGE							

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE



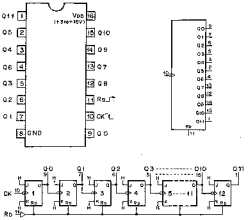
MC14070BF (MOTOROLA) FLAT PACKAGE
C-MOS EXCLUSIVE OR GATE
– TOP VIEW –



A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

MC14040BF (MOTOROLA) FLAT PACKAGE
C-MOS 12-STAGE RIPPLE CARRY BINARY COUNTER/DRIVER
– TOP VIEW –

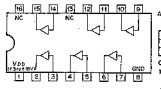


COUNT	Q11	Q10	Q9	Q8	Q7	Q6	Q5	Q4	Q3	Q2	Q1	Q0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	1	0
3	0	0	0	0	0	0	0	0	0	0	1	1
:	:	:	:	:	:	:	:	:	:	:	:	:
4095	1	1	1	1	1	1	1	1	1	1	1	1

RS	Q0 ····· Q11
1	ALL LOW
0	COUNT

0 ; LOW LEVEL
1 ; HIGH LEVEL

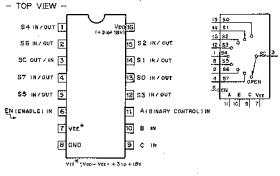
TC4050BF (TOSHIBA) FLAT PACKAGE
C-MOS NON-INVERTING TYPE BUFFER/CONVERTER
– TOP VIEW –



A	Y
0	0
1	1

0 ; LOW LEVEL
1 ; HIGH LEVEL

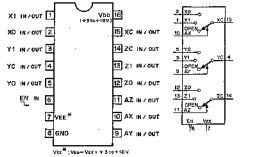
MC14051BF (MOTOROLA) FLAT PACKAGE
C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER
– TOP VIEW –


S4 IN / OUT 1
S6 IN / OUT 2
SC OUT / IN 3
S7 IN / OUT 4
S5 IN / OUT 5
EN (ENABLE) IN 6
VEE* 7
GND 8
16 VDD
(+3.0 to +18V)
15 S2 IN / OUT
14 S1 IN / OUT
13 S0 IN / OUT
12 S3 IN / OUT
11 A (BINARY CONTROL) IN
10 B IN
9 C IN
VEE* : VDD – VEE = 3.0 to +18V
SC
S0 S1 S2 S3 S4 S5 S6 S7
OPEN
A B C VEE
VSS

EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

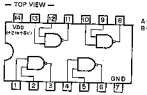
MC14053BF (MOTOROLA) FLAT PACKAGE
C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER
– TOP VIEW –



CONT INPUTS			ON CHANNEL
EN	A	B	X, Y, Z
0	0	0	0
0	1	0	1
1	X	X	OPEN

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

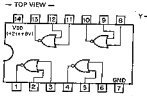
TC40H000F (TOSHIBA) FLAT PACKAGE
C-MOS 3-INPUT NAND GATE
— TOP VIEW —



A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0: LOW LEVEL
1: HIGH LEVEL

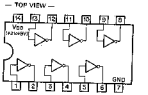
TC40H002F (TOSHIBA) FLAT PACKAGE
C-MOS 3-INPUT NOR GATE
— TOP VIEW —



A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

0: LOW LEVEL
1: HIGH LEVEL

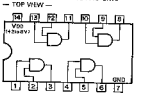
TC40H004F (TOSHIBA) FLAT PACKAGE
C-MOS INVERTER
— TOP VIEW —



A	Y
0	1
1	0

0: LOW LEVEL
1: HIGH LEVEL

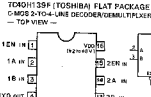
TC40H008F (TOSHIBA) FLAT PACKAGE
C-MOS 2-INPUT POSITIVE-AND GATE
— TOP VIEW —



A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

0: LOW LEVEL
1: HIGH LEVEL

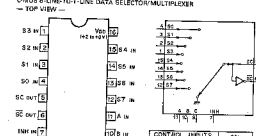
TC40H139F (TOSHIBA) FLAT PACKAGE
C-MOS 2-TO-4-LINE DECODER/DEMULTIPLEXER
— TOP VIEW —



INPUTS			OUTPUTS			
EN	B	A	Y3	Y2	Y1	Y0
0	0	0	1	1	1	0
0	0	1	1	1	0	1
0	1	0	1	0	1	1
0	1	1	0	1	1	1
1	X	X	1	1	1	1

0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE

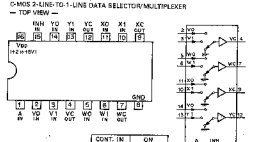
TC40H151F (TOSHIBA) FLAT PACKAGE
C-MOS 8-LINE-TO-1-LINE DATA SELECTOR/MULTIPLEXER
— TOP VIEW —



CONTROL INPUTS				ON CHANNEL
INH	C	B	A	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	GND

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

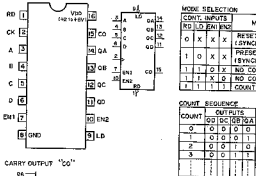
TC40H157F (TOSHIBA) FLAT PACKAGE
C-MOS 2-LINE-TO-1-LINE DATA SELECTOR/MULTIPLEXER
— TOP VIEW —



CONT. IN		ON
INH	A	CHANNEL
0	0	a
0	1	b
1	X	GND

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC40H192F (TOSHIBA) FLAT PACKAGE
C-MOS PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER
— TOP VIEW —



MODE SELECTION

CONT. INPUTS				MODE
RD	LD	EN1	EN2	
0	X	X	X	RESET (SYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

COUNT SEQUENCE

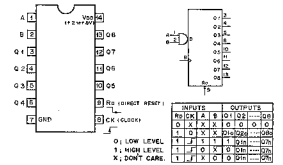
COUNT	OUTPUTS			
	QC	QB	QA	
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE

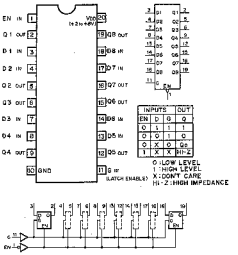
CARRY OUTPUT "CO"

CO GOES HIGH WHEN EN2 IS HIGH AND COUNT IS "15".

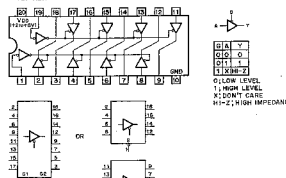
TC40H164F (TOSHIBA) FLAT PACKAGE
C-MOS 8-BIT PARALLEL-OUT SERIAL SHIFT REGISTER
— TOP VIEW —



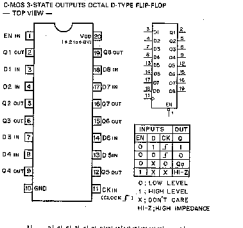
TC40H373F (TOSHIBA) FLAT PACKAGE
C-MOS 3-STATE OUTPUTS OCTAL LATCHES
— TOP VIEW —



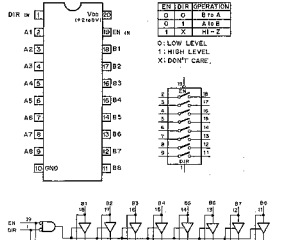
TC40H244F (TOSHIBA) FLAT PACKAGE
C-MOS 3-STATE BUFFER/DRIVER
— TOP VIEW —



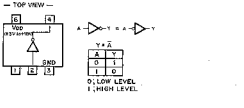
TC40H374F (TOSHIBA) FLAT PACKAGE
C-MOS 3-STATE OUTPUTS OCTAL D-TYPE FLIP-FLOP
— TOP VIEW —



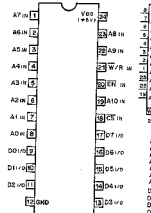
TC40H245F (TOSHIBA) FLAT PACKAGE
C-MOS BILATERAL BUS TRANSCEIVERS WITH 3-STATE OUTPUT
— TOP VIEW —



TC4SU69F (TOSHIBA) FLAT PACKAGE
C-MOS INVERTER BUFFER
— TOP VIEW —



TC5517AFL (TOSHIBA) (ACCESS TIME = 250 nS) FLAT PACKAGE
CMOS 16384(2048×8)-BIT HIGH SPEED STATIC RAM
– TOP VIEW –

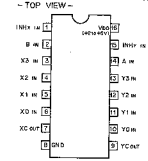


INPUTS			FUNCTION
CE	WR	EN	
D	0	X	WRITE
0	1	0	READ
0	1	1	DISABLE (OUTPUT=HIGH-Z)
1	X	X	DISABLE (OUTPUT=HIGH-Z)

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

A0 – A10 ; ADDRESS INPUTS
WR ; WRITE/READ ENABLE
EN ; OUTPUT ENABLE
CS ; CHIP SELECT
D0 – D7 ; DATA INPUTS/OUTPUTS

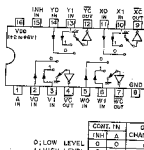
SN74HC153NS (T1) FLAT PACKAGE
TC74HC153F (TOSHIBA) FLAT PACKAGE
CMOS 4-LINE-TO-1-LINE DATA SELECTOR/MULTIPLEXER
– TOP VIEW –



CONTROL IN		DATA IN	
INH	B	A	CHANNEL
0	0	0	0
0	0	1	1
0	1	0	2
0	1	1	3
1	X	X	GND

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

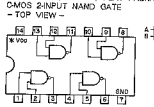
SN74HC158NS (T1) FLAT PACKAGE
TC74HC158F (TOSHIBA) FLAT PACKAGE
CMOS 2-LINE-TO-1-LINE INVERTED DATA SELECTOR/MULTIPLEXER
– TOP VIEW –



CONTROL IN	DATA IN	CHANNEL
INH	A	
0	0	0
0	1	1
1	X	GND

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

SN74HC00ANS (T1) FLAT PACKAGE
TC74HC00F (TOSHIBA) FLAT PACKAGE
CMOS 2-INPUT NAND GATE
– TOP VIEW –

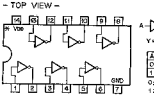


A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

* VDD HC ; +2 to +6V
HCT ; +5V

SN74HC04ANS (T1) FLAT PACKAGE
TC74HC04F (TOSHIBA) FLAT PACKAGE
CMOS INVERTER
– TOP VIEW –

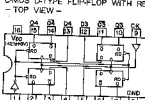


A	Y
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

* VDD HC ; +2 to +6V
HCT ; +5V

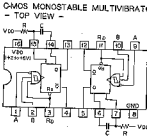
SN74HC175ANS (T1) FLAT PACKAGE
TC74HC175F (TOSHIBA) FLAT PACKAGE
CMOS D-TYPE FLIP-FLOP WITH RESET
– TOP VIEW –



RD	CK	D	Q	$\overline{Q}$
0	X	X	0	1
1	↑	1	1	0
1	↑	0	0	1
1	0	X	No	No

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC74HC221F (TOSHIBA) FLAT PACKAGE
TC74HC221AF (TOSHIBA) FLAT PACKAGE
CMOS MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT
– TOP VIEW –

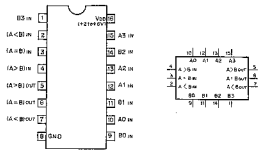


INPUTS			OUTPUTS	
RD	A	B	Q	$\overline{Q}$
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	↑	⊓	⊔
1	↓	1	⊓	⊔
1	0	1	⊓	⊔

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

OUTPUT PULSE WIDTH = 0.7CR

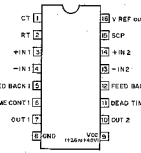
SN74HC85NS (TI) FLAT PACKAGE
TC74HC85F (TOSHIBA) FLAT PACKAGE
C-MOS 4-BIT MAGNITUDE COMPARATOR
— TOP VIEW —

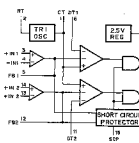


INPUTS							CASCADING			OUTPUTS		
DATA COMPARING												
	A3, B3	A2, B2	A1, B1	A0, B0	A<B	A=B	A>B	A<B	A=B	A>B
A>B	A3>B3	X	X	X	X	X	X	0	0	1
	A3=B3	A2>B2	X	X						
	A2=B2	A1>B1	X							
	A3=B3	A2=B2	A1>B1	A0>B0						
A=B	A3=B3	A2=B2	A1=B1	A0=B0	0	0	0	1	0	1
					0	0	1	0	0	1
					X	1	X	0	1	0
					1	0	0	1	0	0
					1	0	1	0	0	0
A<B	A3=B3	A2=B2	A1=B1	A0<B0						
	A3=B3	A2=B2	A1<B1	X	X	X	X	1	0	0
	A3=B3	A2<B2	X	X						
	A3<B3	X	X	X						

0 : LOW LEVEL 1 : HIGH LEVEL X : DON'T CARE

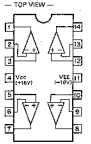
TL1451CNS (TI) FLAT PACKAGE
DUAL PWM POWER CONTROLLER
— TOP VIEW —



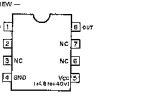


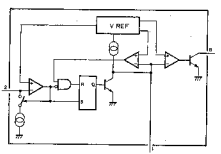
TL062CPS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(JFET-INPUT)
— TOP VIEW —

TL064CNS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —



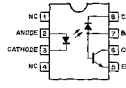
TL7700CP (TI)
VARIABLE SUPPLY VOLTAGE SUPERVISOR
— TOP VIEW —



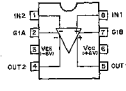


TL082CPS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(J FET-INPUT)
— TOP VIEW —

TLP651 (TOSHIBA)
PHOTO COUPLER
— TOP VIEW —



μPC1663G (NEC) FLAT PACKAGE
WIDEBAND VIDEO AMPLIFIER
— TOP VIEW —

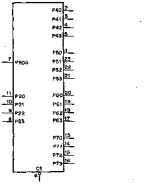


μPC311G2 (NEC) FLAT PACKAGE
VOLTAGE COMPARATOR
— TOP VIEW —

μPC358G2 (NEC) FLAT PACKAGE
DUAL OPERATIONAL AMPLIFIERS
— TOP VIEW —

μPC393G2 (NEC) FLAT PACKAGE
VOLTAGE COMPARATOR
— TOP VIEW —

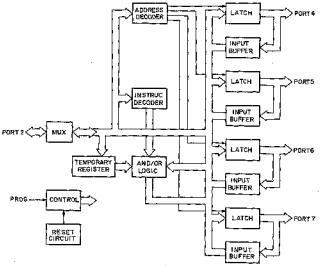
μPD82C43G (NEC) FLAT PACKAGE
C-MOS I/O PORT EXPANDER
— TOP VIEW —



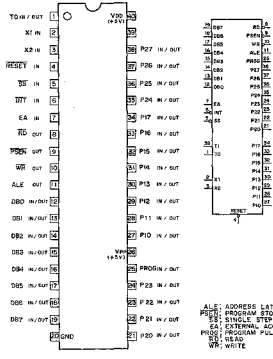
CONTROL AND PORT ADDRESSING

P23	P22	P21	P20	PORT	CONTROL
0	0	0	0	4	
0	0	0	1	5	READ
0	0	1	0	6	
0	0	1	1	7	
0	1	0	0	4	
0	1	0	1	5	WRITE
0	1	1	0	6	
0	1	1	1	7	
1	0	0	0	4	
1	0	0	1	5	OR
1	0	1	0	6	
1	0	1	1	7	
1	1	0	0	4	
1	1	0	1	5	AND
1	1	1	0	6	
1	1	1	1	7	

PROG ; PROGRAM PULSE INPUT
CS ; CHIP SELECT INPUT
P20~P23 ; I/O PORT 3 FOR CPU
P40~P43 ; I/O PORT4
P50~P53 ; I/O PORT5
P60~P63 ; I/O PORT6
P70~P73 ; I/O PORT7



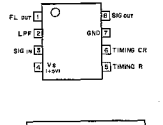
μPD8749HD (NEC)
N-MOS 8-BIT MICROPROCESSOR
— TOP VIEW —

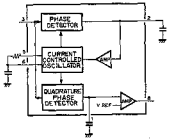


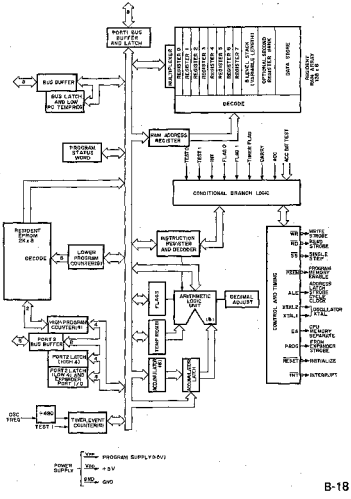
ALE: ADDRESS LATCH ENABLE
PSEN: PROGRAM STORE ENABLE
SS: SINGLE STEP
EA: EXTERNAL ACCESS
PROG: PROGRAM PULSE
RD: READ
WR: WRITE

NJM567M (JRC) FLAT PACKAGE
TONE DECODER
— TOP VIEW —

NJM567M



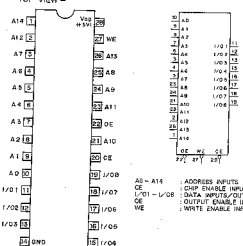




TOP VIEW (SCALE 4/1)

DTA143XK (R1 = 4.7K, R2 = 10K)

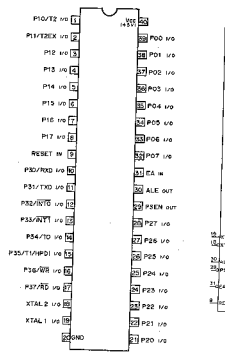
CXK58257AM-10L (SONY) FLAT PACKAGE
CMOS 256K (32768 × 8)-BIT STATIC RAM
– TOP VIEW –

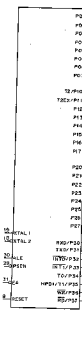


OE	CE	WE	MODE	I/O TERMINAL
↑	↑	×	NOT SELECT	HIGH IMPEDANCE
0	↓	↑	OUTPUT DISABLE	HIGH IMPEDANCE
↓	↓	↑	READ	OUTPUT DATA
0	×	↓	WRITE	INPUT DATA

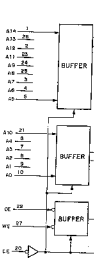
0 : LOW LEVEL
1 : HIGH LEVEL
× : DON'T CARE

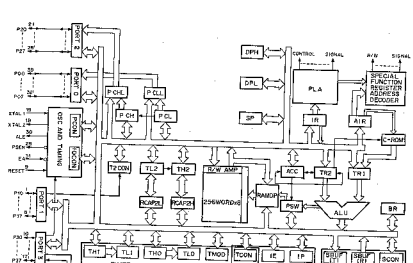
MSM80C154RS (OKI)
C-MOS 8-BIT MICROCOMPUTER
– TOP VIEW –





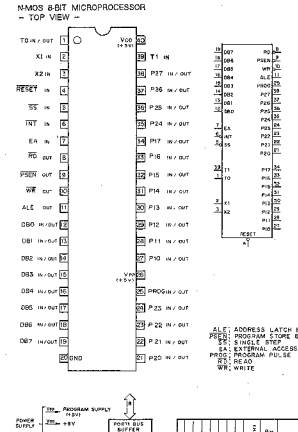
ALE : ADDRESS LATCH ENABLE OUTPUT
EA : CPU MEMORY SEPARATE INPUT
HPDX : HARD POWER DOWN INPUT
INT0, INT1 : EXTERNAL INTERRUPT
P00 ~ P07 : PORT 0 (BUS PORT) INPUT/OUTPUT
P10 ~ P17 : PORT 1 INPUT/OUTPUT
P20 ~ P27 : PORT 2 INPUT/OUTPUT
P30 ~ P37 : PORT 3 INPUT/OUTPUT
PSEN : PROGRAM STORE ENABLE OUTPUT
RD : EXTERNAL DATA MEMORY READ STROBE
RESET : RESET INPUT
RXD : SERIAL PORT
T0 ~ T2 : TIMER COUNTER EXTERNAL CLOCK
T2EX : TIMER COUNTER 2 EXTERNAL CONTROL
TXD : SERIAL OUTPUT PORT
WR : EXTERNAL DATA MEMORY WRITE STROBE
XTAL1, XTAL2 : CRYSTAL





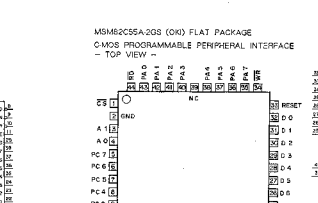
MSM80C49-630RS (OKI)
MSM80C49-631RS (OKI)
MSM80C49-684RS (OKI)

N-MOS 8-BIT MICROPROCESSOR
– TOP VIEW –



ALE: ADDRESS LATCH ENABLE
PSEN: PROGRAM STORE ENABLE
SS: SINGLE STEP
EA: EXTERNAL ACCESS
PROG: PROGRAM PULSE
RD: READ
WR: WRITE

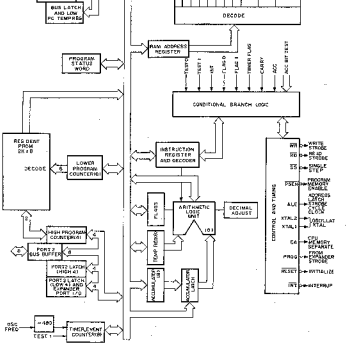
MSM82C55A-2GS (OKI) FLAT PACKAGE
C-MOS PROGRAMMABLE PERIPHERAL INTERFACE
– TOP VIEW –

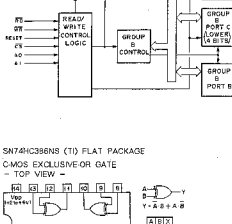


A1	A0	CS	WR	RD	OPERATION
0	0	0	1	0	PORT A ⟶ DATA BUS
0	1	0	1	0	PORT B ⟶ DATA BUS
1	0	0	1	0	PORT C ⟶ DATA BUS
1	1	0	1	0	NO OPERATION
0	0	0	0	1	DATA BUS ⟶ PORT A
0	1	0	0	1	DATA BUS ⟶ PORT B
1	0	0	0	1	DATA BUS ⟶ PORT C
1	1	0	0	1	DATA BUS ⟶ CONTROL REGISTER
X	X	1	X	X	HIGH IMPEDANCE

0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE

A0, A1 : PORT SELECT ADDRESS
CS : CHIP SELECT
D0~7 : DATA BUS
PA0~7 : PORT A IN/OUT
PB0~7 : PORT B IN/OUT
PC0~7 : PORT C IN/OUT
RD : READ
WR : WRITE





SN74HC386NS (TI) FLAT PACKAGE
C-MOS EXCLUSIVE-OR GATE
– TOP VIEW –

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

0 : LOW LEVEL
1 : HIGH LEVEL

SN75176BP (TI)

TTL-DIFFERENTIAL BUS TRANSCEIVER

– TOP VIEW –

FUNCTION TABLE

– DRIVER –

INPUT	ENABLE	OUTPUT	
D	DE	A	B
1	1	1	0
0	1	0	1
X	0	HI-Z	HI-Z

– RECEIVER –

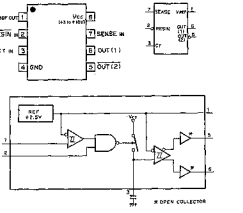
DIFFERENTIAL INPUTS	ENABLE	OUTPUT
A-B	RE	R
$V_{ID} > 0.2V$	0	1
$-0.2V < V_{ID} < 0.2V$	0	?
$V_{ID} < -0.2V$	0	0
X	1	HI-Z

1 : HIGH LEVEL
0 : LOW LEVEL
X : DON'T CARE
HI-Z : HIGH IMPEDANCE
? : INDETERMINATE

TL7705CPS-B (TI) FLAT PACKAGE

POWER VOLTAGE SUPERVISOR

– TOP VIEW –

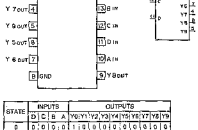


MC14028BF (MOTOROLA) FLAT PACKAGE

TC4028BF (TOSHIBA) FLAT PACKAGE

CMOS BCD TO DECIMAL DECODER

– TOP VIEW –



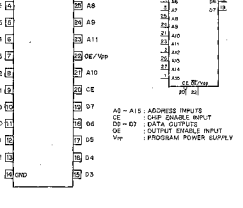
STATE	INPUTS				OUTPUTS									
	D	C	B	A	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	1	0	0	0	0	0	0	0	0
2	0	0	1	0	0	0	1	0	0	0	0	0	0	0
3	0	0	1	1	0	0	0	1	0	0	0	0	0	0
4	0	1	0	0	0	0	0	0	1	0	0	0	0	0
5	0	1	0	1	0	0	0	0	0	1	0	0	0	0
6	0	1	1	0	0	0	0	0	0	0	1	0	0	0
7	0	1	1	1	0	0	0	0	0	0	0	1	0	0
8	1	0	0	0	0	0	0	0	0	0	0	0	1	0
9	1	0	0	1	0	0	0	0	0	0	0	0	0	1
10	1	0	1	0	0	0	0	0	0	0	0	0	0	0
11	1	0	1	1	0	0	0	0	0	0	0	0	0	0
12	1	1	0	0	0	0	0	0	0	0	0	0	0	0
13	1	1	0	1	0	0	0	0	0	0	0	0	0	0
14	1	1	1	0	0	0	0	0	0	0	0	0	0	0
15	1	1	1	1	0	0	0	0	0	0	0	0	0	0

0 : LOW LEVEL
1 : HIGH LEVEL

TMS27C512-20JL (TI)

CMOS 512K (65,536x8 – 524,288)-BIT ERASABLE PROM

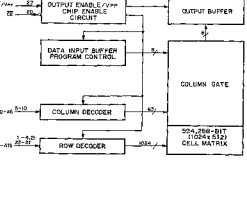
– TOP VIEW –



A0 – A15 : ADDRESS INPUTS
CE : CHIP ENABLE INPUT
D0 – D7 : DATA OUTPUTS
OE : OUTPUT ENABLE INPUT
V_{PP} : PROGRAM POWER SUPPLY

	CE	OE/V_{PP}	V_{DD}	D7	FUNCTION
A0	0	0	+5V	Dout	READ
A1	0	1	+5V	HI-Z	OUTPUT DISABLE
X	1	X	+5V	HI-Z	STANDBY
A2	0	+12.5V	+5V	Din	PGM
A3	0	0	+5V	Dout	PGM VERIFY
X	1	+12.5V	+5V	HI-Z	PGM INH

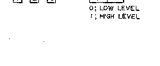
0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE
HI-Z : HIGH IMPEDANCE



TC7S04F (TOSHIBA) FLAT PACKAGE

CMOS INVERTER

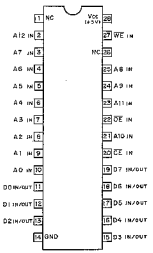
– TOP VIEW –



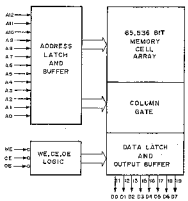
A	Y
0	1
1	0

0 : LOW LEVEL
1 : HIGH LEVEL

μPD23C64C-20 (NEC) (ACCESS TIME = 200nS)
CMOS 64K (8Kx8) ELECTRICALLY ERASABLE PROM
– TOP VIEW –

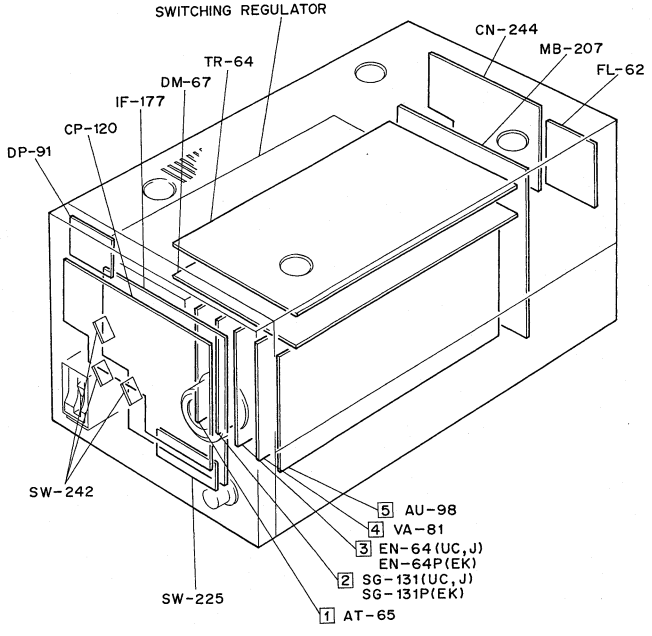


A0 – A12 ; ADDRESS INPUTS
D0 – D7 ; DATA INPUTS/OUTPUTS
WE ; WRITE ENABLE INPUT
CE ; CHIP ENABLE INPUT
OE ; OUTPUT ENABLE INPUT



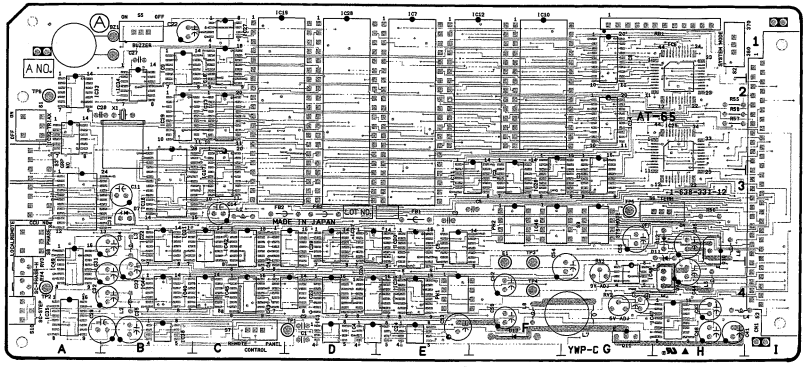
SECTION C
SCHEMATIC DIAGRAMS AND BOARD ILLUSTRATIONS

BOARD LAYOUT



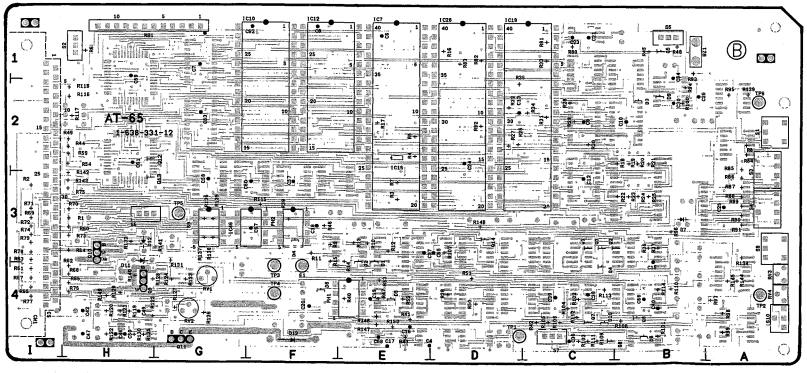
AT-65 BOARD

COMPONENT SIDE



1-638-331-12 COMPONENT SIDE

SOLDERING SIDE

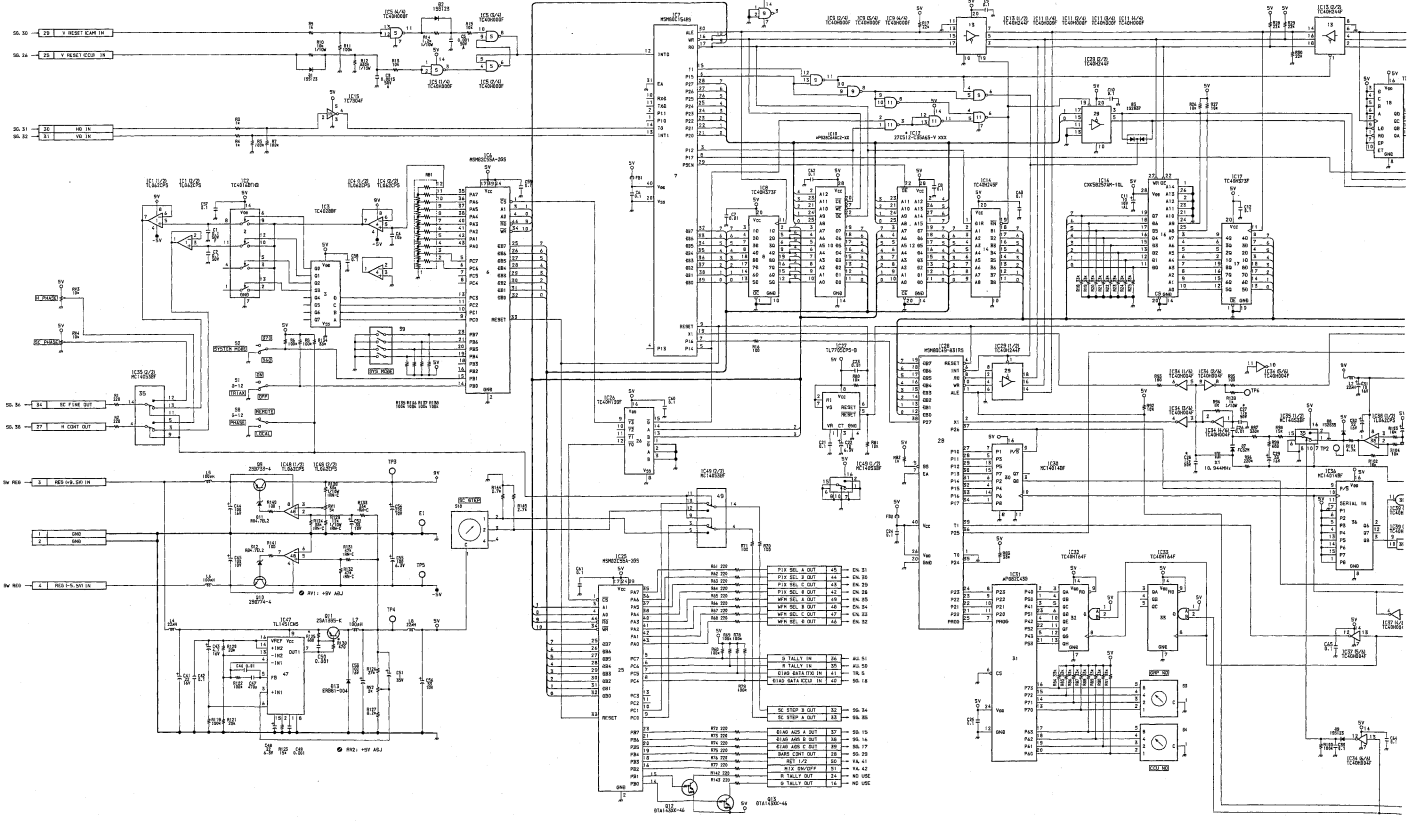


1-638-331-12 SOLDERING SIDE

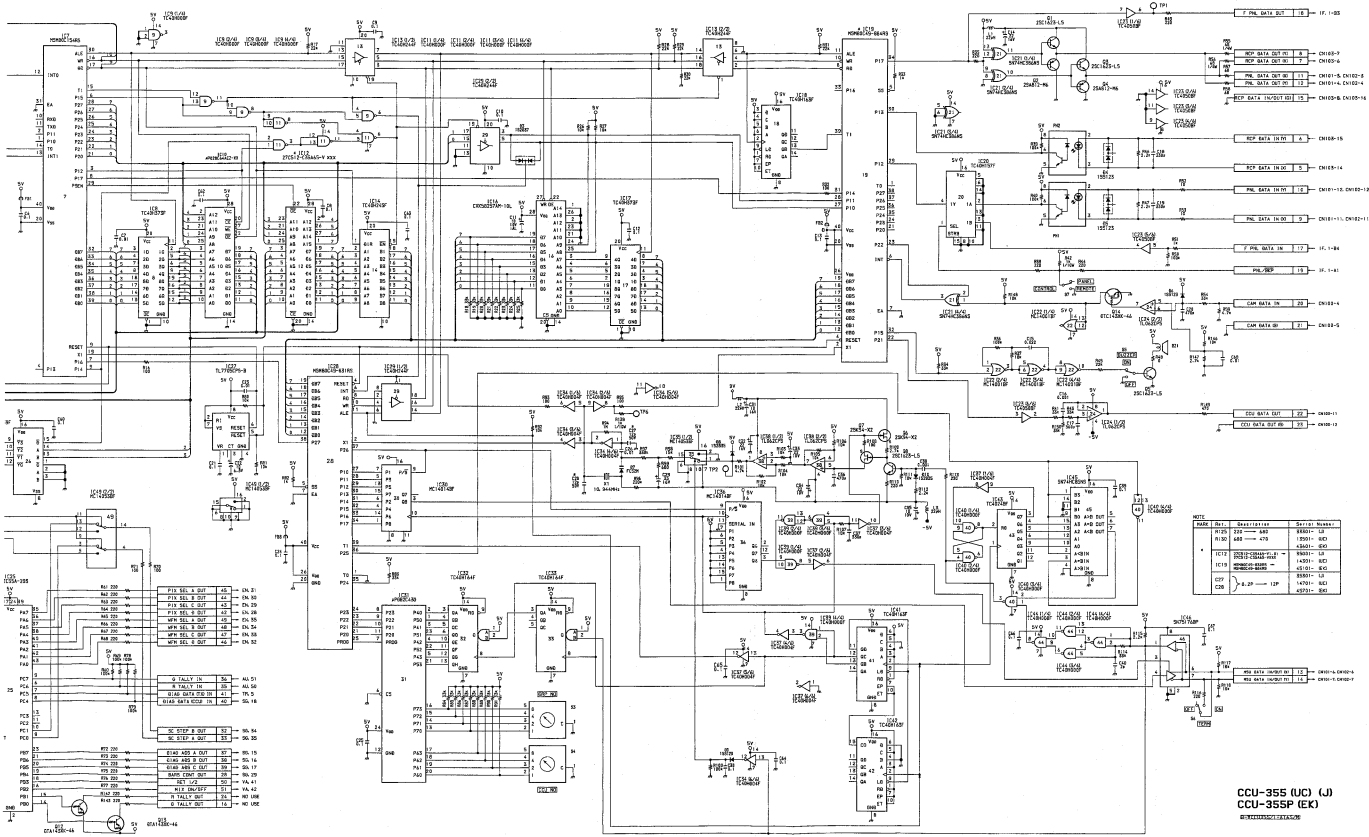
AT-65 1-638-331-12

BZ1	B1	IC25	H2	S5	B1
		IC26	F3	S6	H3
CN17	E1	IC27	C1	S7	C4
		IC28	D1	S8	A3
CN110	F1	IC29	B2	S9	G3
CN112	F1	IC30	E3	S10	A4
CN119	C1	IC31	B3		
CN128	D1	IC32	A2	TP1	D4
		IC33	A2	TP2	A4
CN1	I4	IC34	B2	TP3	F3
		IC35	A4	TP4	F4
D1	E3	IC36	E4	TP5	G3
D2	E3	IC37	D3	TP6	A2
D3	B2	IC38	B4		
D4	F3	IC39	D3	X1	B2
D5	E4	IC40	B4		
D6	F4	IC41	C4		
D7	B3	IC42	C3		
D8	B4	IC43	C4		
D9	B2	IC44	B4		
D10	C4	IC45	C4		
D11	H3	IC46	F3		
D12	H3	IC47	G4		
D13	F4	IC48	G4		
		IC49	A4		
E1	F3				
		PH1	E4		
FB1	E3	PH2	F3		
FB2	C3				
FB3	D3	Q1	C3		
		Q2	C3		
IC1	D4	Q3	C3		
IC2	F3	Q4	C4		
IC3	G3	Q5	B1		
IC4	D4	Q6	B4		
IC5	E3	Q7	C4		
IC6	H1	Q8	B4		
IC7	E1	Q9	H4		
IC8	G1	Q10	H3		
IC9	B1	Q11	G4		
IC10	F1	Q12	G2		
IC11	E3	Q13	F3		
IC12	F1	Q14	D3		
IC13	C2				
IC14	G2	RB1	H1		
IC15	E2				
IC16	B3	RV1	G4		
IC17	C3	RV2	G4		
IC18	C2	RV3	A4		
IC19	C1	RV4	A4		
IC20	D4				
IC21	B3	S1	A2		
IC22	B3	S2	H1		
IC23	D4	S3	A3		
IC24	E4	S4	A3		

AT-65 BOARD : AUDIO CONTROL SYSTEM



1 | AT-65

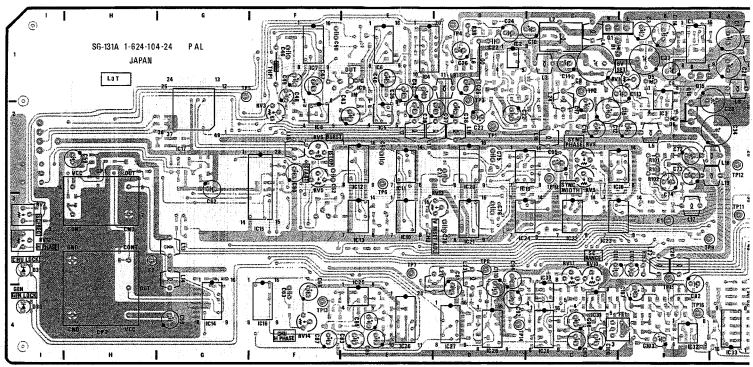


CCU-355 (UC) (J)
CCU-355P (EK)

SG-131P BOARD

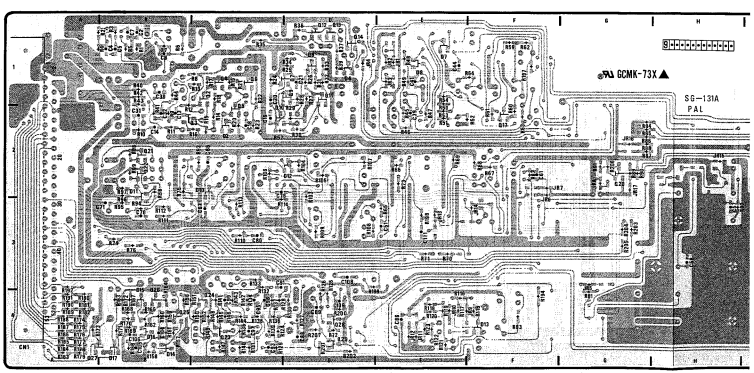
Serial No. 41501 and higher (EK)

COMPONENT SIDE



1-6

SOLDERING SIDE



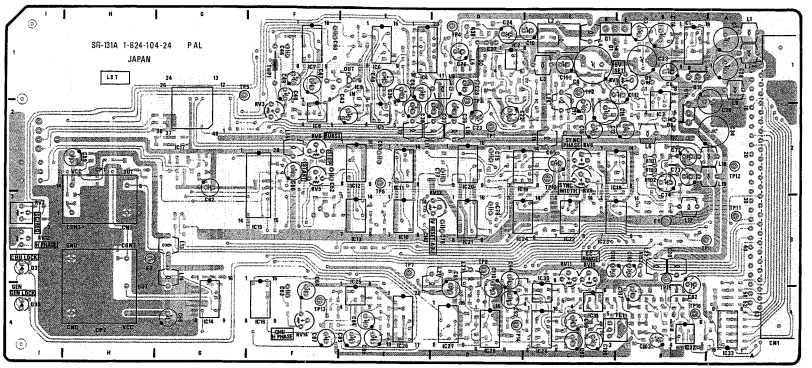
1-62

SONY-SP01632 / DRUCK: 21

SG-131P BOARD

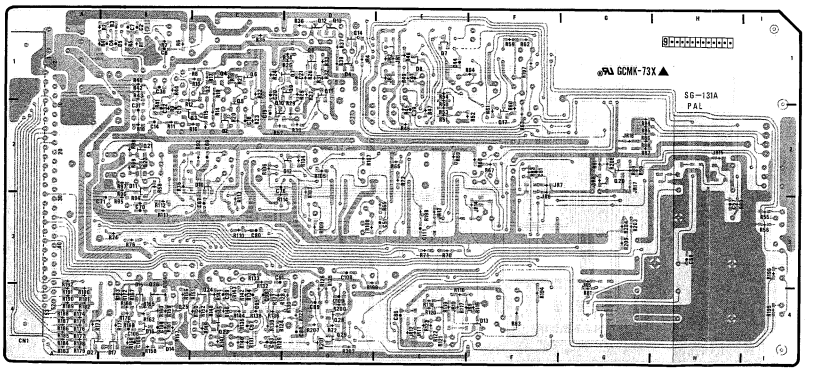
Serial No. 41501 and higher (EK)

COMPONENT SIDE



1-624-104-24

SOLDERING SIDE

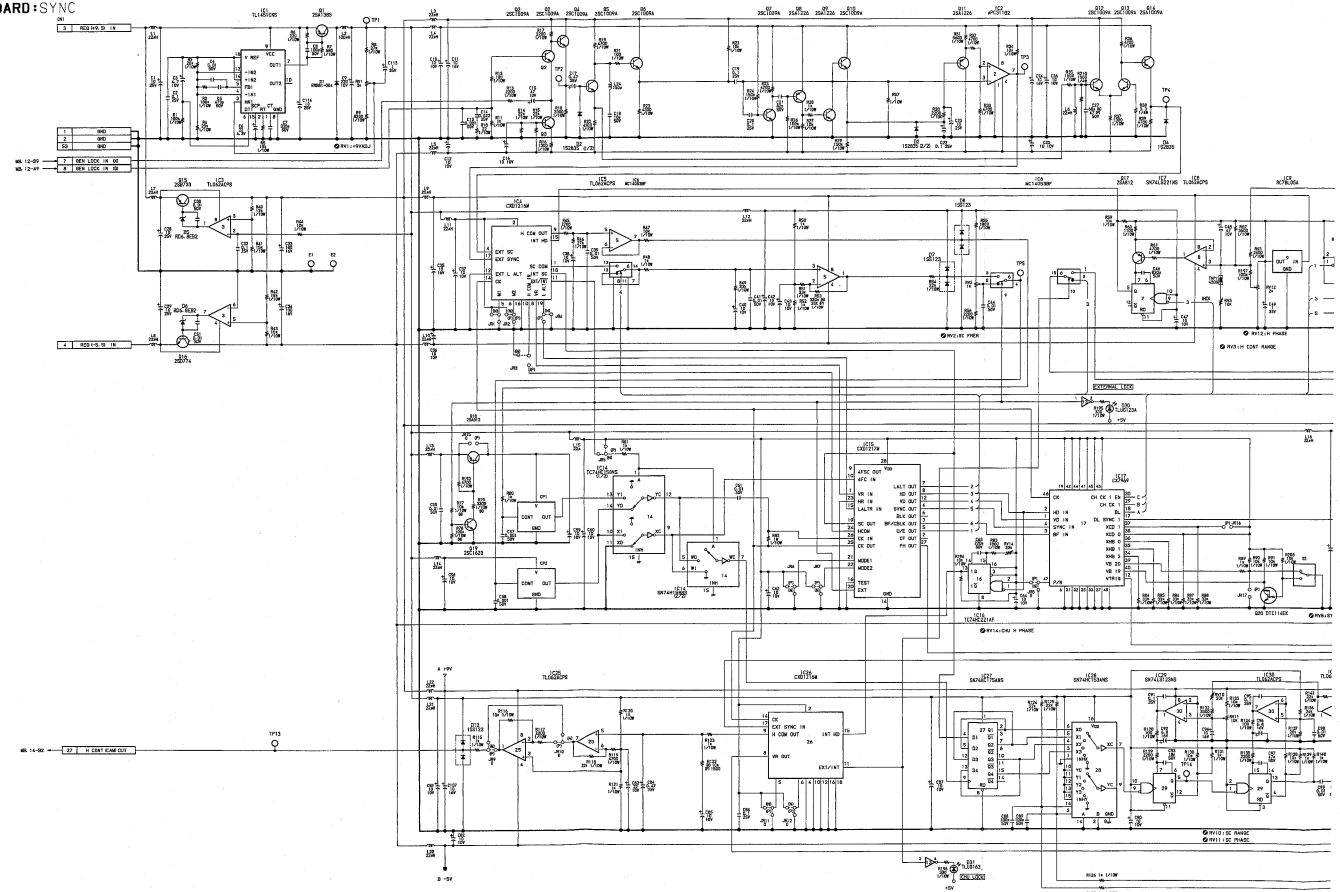


1-624-104-24

SG-131 1-624-104-24

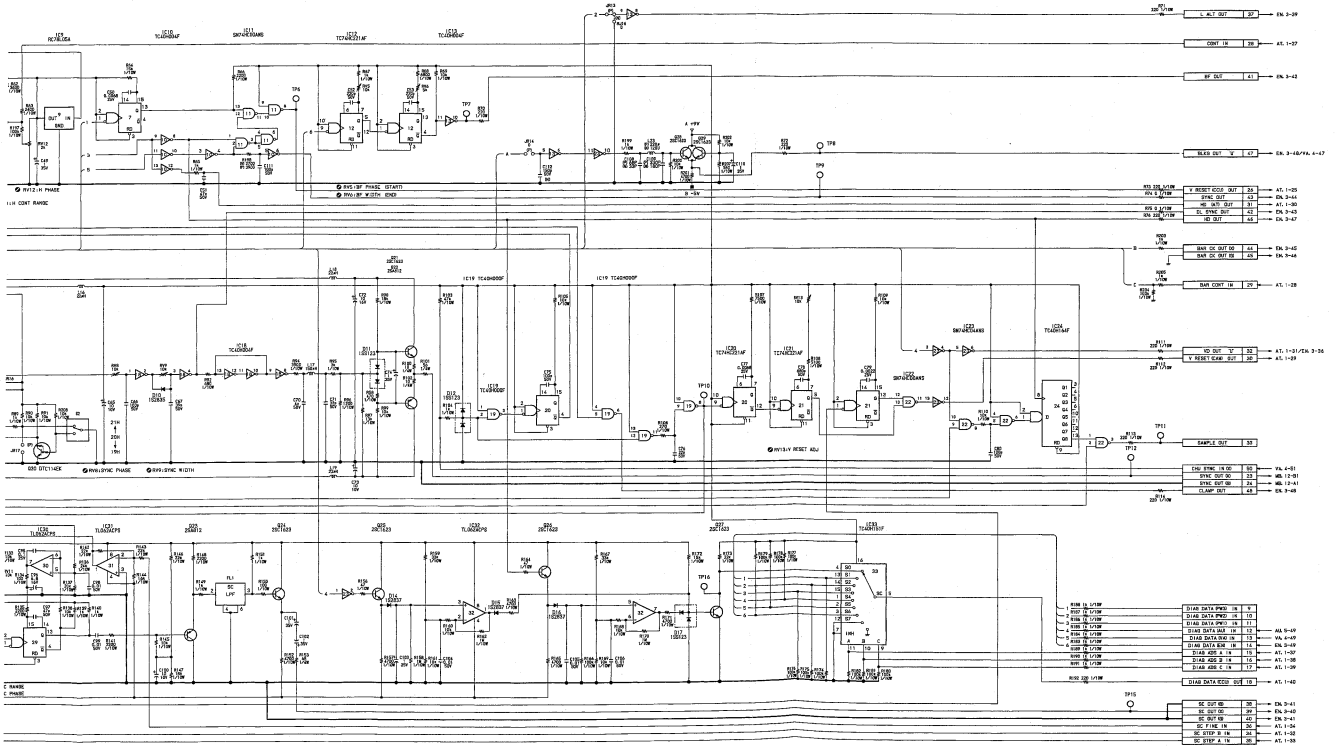
CN1	A-4	IC24	D-3	Q17	F-2
		IC25	E-4	Q20	G-2
CP1	H-3	IC26	E-4	Q21	B-2
CP2	H-4	IC27	D-4	Q22	B-2
		IC28	D-4	Q23	C-4
D1	C-1	IC29	C-4	Q24	C-4
D2	C-2	IC30	C-4	Q25	B-4
D4	D-1	IC31	C-4	Q26	B-4
D5	B-1	IC32	B-4	Q27	A-4
D6	B-2	IC33	A-4	Q28	D-4
D7	E-1			Q29	D-4
D8	E-1	L1	A-1		
D10	C-2	L2	C-1	RV1	C-1
D11	B-2	L3	C-1	RV2	I-3
D12	D-2	L4	C-1	RV3	F-2
D13	F-4	L5	B-2	RV5	F-2
D14	B-4	L6	D-1	RV6	F-2
D15	B-4	L7	A-1	RV8	C-2
D16	B-4	L8	A-1	RV9	C-2
D17	B-4	L9	D-1	RV10	C-3
D30	I-4	L10	D-2	RV11	C-3
D31	I-3	L11	E-2	RV12	I-3
		L12	E-2	RV13	D-3
E1	B-3	L13	G-3	RV14	F-4
E2	H-3	L14	G-3		
		L15	F-2	THP1	F-1
FL1	B-4	L16	C-2		
		L17	B-3	TP1	D-2
IC1	B-1	L18	A-2	TP2	C-1
IC2	D-1	L19	A-2	TP3	D-1
IC3	B-2	L20	B-3	TP4	D-1
IC4	E-1	L21	D-3	TP5	G-1
IC5	E-2	L22	B-3	TP6	E-2
IC6	E-1	L23	D-3	TP7	E-3
IC7	F-1	L24	C-1	TP8	D-3
IC8	F-2			TP9	B-3
IC9	E-1	Q1	C-1	TP10	C-2
IC10	E-3	Q2	C-1	TP11	A-3
IC11	E-2	Q3	B-2	TP12	A-2
IC12	E-2	Q4	C-1	TP13	F-4
IC13	E-3	Q5	C-2	TP14	D-4
IC14	G-4	Q6	C-1	TP15	B-3
IC15	F-2	Q7	D-1	TP16	B-4
IC16	F-4	Q8	D-1		
IC17	G-2	Q9	D-1		
IC18	C-2	Q10	C-2		
IC19	D-2	Q11	D-1		
IC20	D-2	Q12	D-1		
IC21	D-3	Q13	D-1		
IC22	C-3	Q14	D-1		
IC23	C-3	Q15	B-1		
		Q16	B-2		

BOARD NAME
SG-131/131P BOARD : SYNC



CCU-355 (UC) (J)
CCU-355P (EK)

SONY-SP01632 / DRUCK: 23



C-13

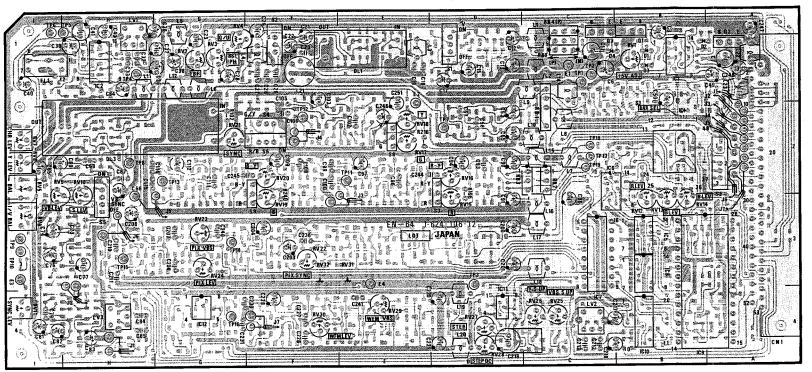
C-14

CCU-355 (UC) (J)
CCU-355P (EK)

B-CCU355-SG131M

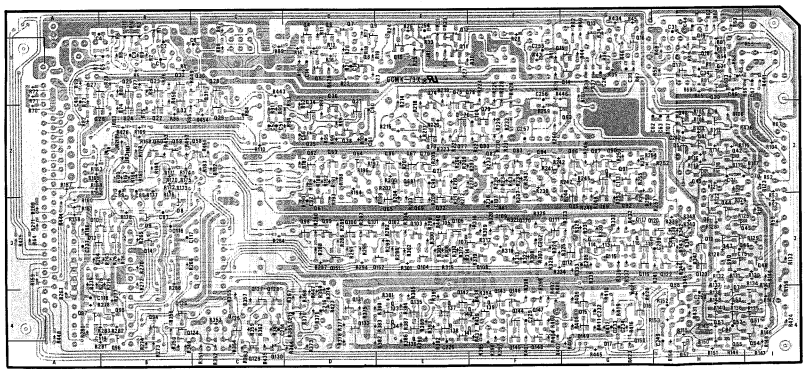
EN-64/64P BOARD

COMPONENT SIDE



1-624-106-12

SOLDERING SIDE

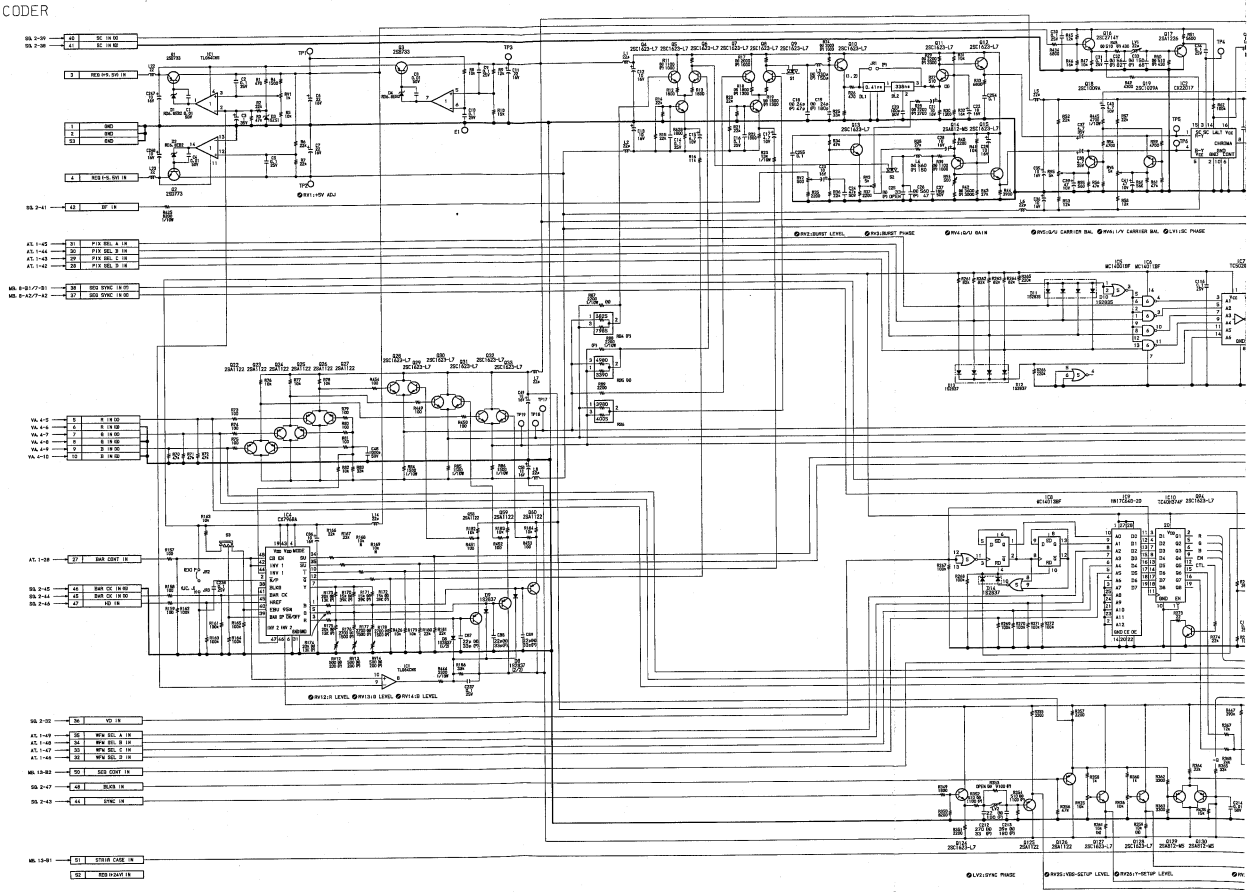


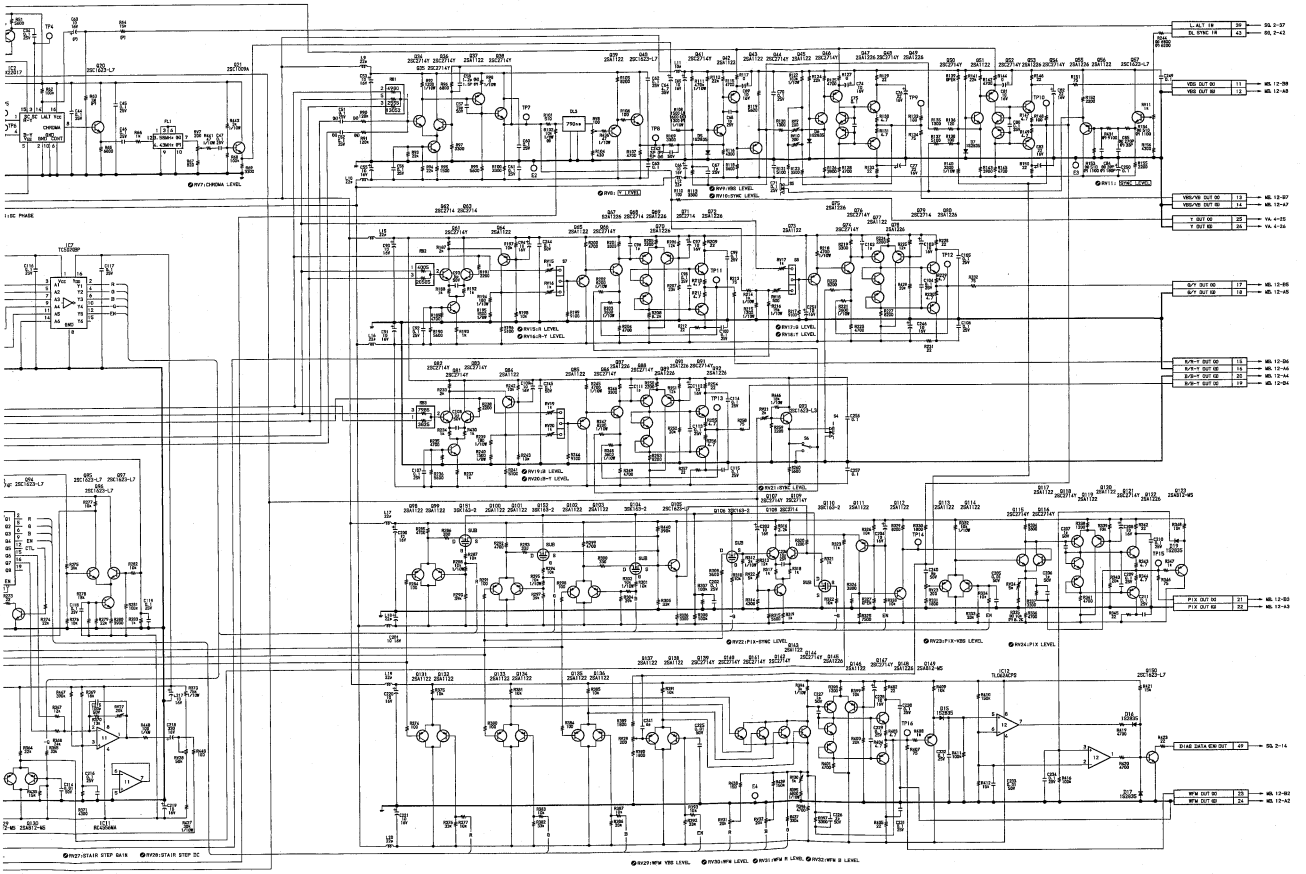
1-624-106-12

EN-64 1-624-106-12

CN1	A-4	L11	H-1	Q37	D-2	Q89	G-3	Q141	E-4	S1	D-1
CN19	B-4	L12	G-1	Q38	D-2	Q90	G-2	Q142	E-4	S2	F-1
		L14	C-1	Q39	H-2	Q91	G-2	Q143	F-4	S3	B-2
D1	B-1	L15	C-2	Q40	H-2	Q92	G-3	Q144	F-4	S4	F-2
D2	B-1	L16	C-3	Q41	H-2	Q93	G-2	Q145	F-4	S5	H-3
D3	B-1	L17	C-3	Q42	H-2	Q94	B-4	Q146	F-4	S6	F-2
D4	C-1	L18	C-3	Q43	H-2	Q95	B-4	Q147	F-4	S7	D-3
D5	H-2	L19	E-4	Q44	H-3	Q96	B-4	Q148	F-4	S8	E-2
D6	H-3	L20	E-4	Q45	H-3	Q97	A-4	Q149	G-4	S9	F-3
D7	H-4	L22	A-1	Q46	H-3	Q98	D-3	Q150	G-4		
D8	B-3	L23	A-1	Q47	H-3	Q99	D-3	Q151	D-3	TP1	C-1
D9	B-3			Q48	I-3	Q100	D-3	Q152	D-3	TP2	C-1
D10	A-3	LV1	H-1	Q49	H-3	Q101	D-3			TP3	D-3
D11	B-3	LV2	C-4	Q50	H-4	Q102	E-3	RB1	C-2	TP4	H-1
D12	B-3	LV3	H-4	Q51	I-4	Q103	E-3	RB2	C-2	TP5	H-1
D13	A-3			Q52	H-4	Q104	E-3	RB3	D-2	TP6	I-1
D14	B-3	Q1	B-1	Q53	H-4	Q105	E-3	RB4(P)	C-1	TP7	D-2
D15	G-4	Q2	A-1	Q54	I-4	Q106	D-3	RB5(N)	C-1	TP8	H-2
D16	G-4	Q3	C-1	Q55	H-4	Q107	D-3	RB6	C-1	TP9	I-3
D17	G-4	Q4	D-1	Q56	H-3	Q108	D-3			TP10	I-3
D19	H-3	Q5	D-1	Q57	H-4	Q109	C-3	RV1	B-1	TP11	E-2
		Q6	D-1	Q58	C-2	Q110	C-3	RV3	G-1	TP12	F-2
DL3	H-2	Q7	D-1	Q59	B-2	Q111	C-3	RV4	G-1	TP13	G-2
		Q8	D-1	Q60	B-2	Q112	C-3	RV5	I-2	TP14	G-3
E1	C-1	Q9	D-1	Q61	D-3	Q113	B-3	RV6	I-3	TP15	H-3
E2	E-1	Q10	E-1	Q62	D-2	Q114	B-3	RV7	I-2	TP16	G-4
E3	E-3	Q11	E-1	Q63	D-2	Q115	B-3	RV8	I-2	TP17	C-2
E4	E-3	Q12	E-1	Q64	D-2	Q116	B-3	RV9	I-2	TP18	C-2
		Q13	G-1	Q65	E-3	Q117	B-4	RV10	H-2	TP19	C-2
FL1	I-1	Q14	G-1	Q66	E-2	Q118	B-4	RV11	I-4		
		Q15	G-1	Q67	E-2	Q119	B-4	RV12	B-3		
IC1	B-1	Q16	G-1	Q68	E-2	Q120	H-3	RV13	B-3		
IC2	H-1	Q17	H-1	Q69	E-3	Q121	H-3	RV14	B-3		
IC4	B-2	Q18	H-1	Q70	E-2	Q122	H-3	RV15	D-3		
IC5	B-3	Q19	H-1	Q71	E-2	Q123	H-3	RV16	D-2		
IC6	C-2	Q20	H-1	Q72	E-3	Q124	B-4	RV17	E-2		
IC7	C-4	Q21	H-1	Q73	E-2	Q125	C-4	RV18	E-2		
IC8	B-3	Q22	B-2	Q74	E-1	Q126	B-4	RV19	F-3		
IC10	B-4	Q23	B-1	Q75	E-1	Q127	C-3	RV20	F-2		
IC11	D-4	Q24	B-2	Q76	E-2	Q128	C-3	RV21	G-2		
IC12	G-4	Q25	B-1	Q77	E-2	Q129	C-4	RV22	F-3		
		Q26	A-2	Q78	F-1	Q130	C-4	RV23	G-3		
L1	C-1	Q27	A-1	Q79	F-2	Q131	D-4	RV24	G-3		
L2	C-1	Q28	C-1	Q80	F-2	Q132	D-4	RV25	C-4		
L3	E-1	Q29	C-2	Q81	F-3	Q133	E-4	RV26	C-4		
L4	G-1	Q30	C-1	Q82	F-2	Q134	E-4	RV27	D-4		
L5	G-1	Q31	C-2	Q83	F-2	Q135	E-4	RV28	D-4		
L6	G-1	Q32	B-1	Q84	F-2	Q136	E-4	RV29	E-4		
L7	C-2	Q33	B-2	Q85	G-3	Q137	E-4	RV30	F-4		
L8	C-2	Q34	D-2	Q86	G-2	Q138	E-4	RV31	E-3		
L9	C-1	Q35	D-2	Q87	G-2	Q139	F-4	RV32	F-3		
L10	C-2	Q36	D-1	Q88	G-2	Q140	E-4				

EN-64/EN64P BOARD : ENCODER





C-21

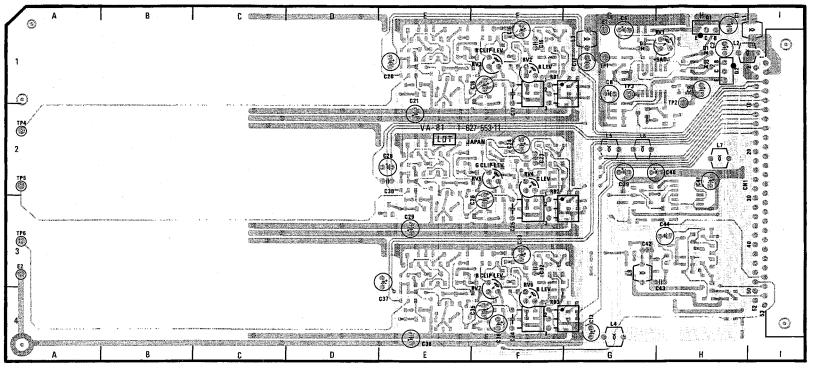
C-22

CCU-355 (J) (UC)
CCU-355P (EK)

B-CCU355-EN64M

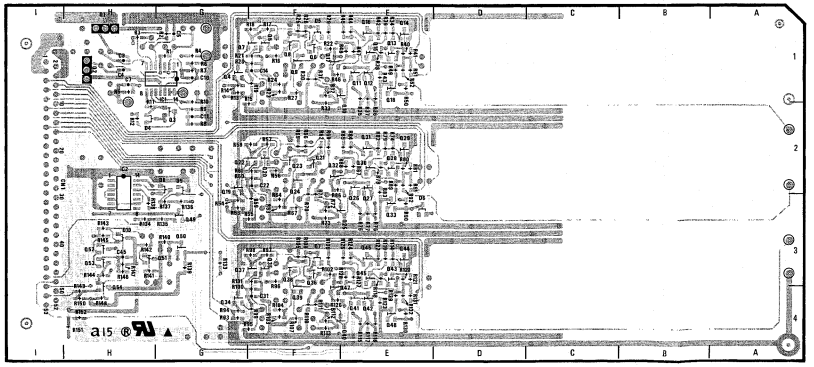
VA-81 BOARD

COMPONENT SIDE



1-627-553-11

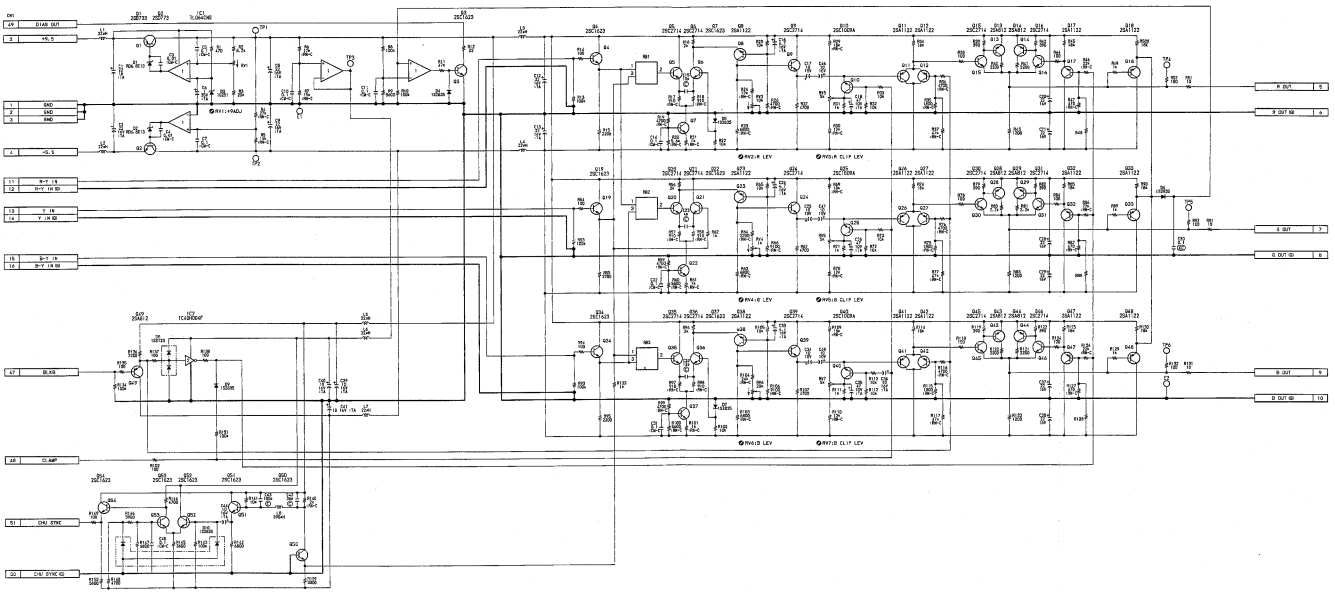
SOLDERING SIDE



1-627-553-11

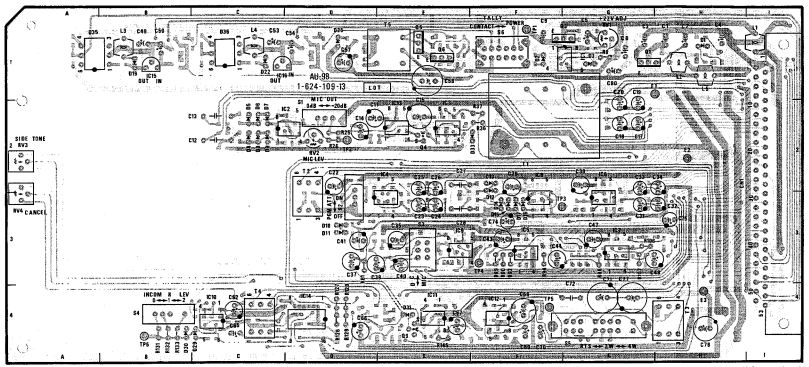
VA-81 1-627-553-11

CN1	I-2	Q36	F-3
		Q37	F-3
E1	G-1	Q38	F-3
E2	A-3	Q39	F-4
		Q40	E-4
IC1	G-1	Q41	E-4
IC2	H-2	Q42	E-4
		Q43	E-3
L1	I-1	Q44	E-3
L2	H-1	Q45	E-3
L3	G-1	Q46	E-3
L4	G-4	Q47	F-4
L5	G-2	Q48	E-4
L6	G-2	Q49	G-3
L7	H-2	Q50	G-3
L8	G-3	Q51	H-3
		Q52	H-3
Q1	H-1	Q53	H-3
Q2	H-1	Q54	H-4
Q3	G-2		
Q4	G-1	RB2	G-3
Q5	F-1	RB3	G-4
Q6	F-1		
Q7	F-1	RV1	H-1
Q8	F-1	RV2	F-1
Q9	F-1	RV3	F-1
Q10	E-1	RV4	F-2
Q11	E-1	RV5	F-2
Q12	E-1	RV6	F-4
Q13	E-1	RV7	F-4
Q14	E-1		
Q15	E-1	TP1	G-1
Q16	E-1	TP2	H-1
Q17	F-1	TP3	G-1
Q18	E-1	TP4	A-2
Q19	G-2	TP5	A-2
Q20	F-2	TP6	A-3
Q21	F-2		
Q22	F-2		
Q23	F-2		
Q24	F-2		
Q25	E-3		
Q26	E-2		
Q27	E-2		
Q28	E-2		
Q29	E-2		
Q30	E-2		
Q31	E-2		
Q32	F-2		
Q33	E-3		
Q34	G-4		
Q35	F-3		



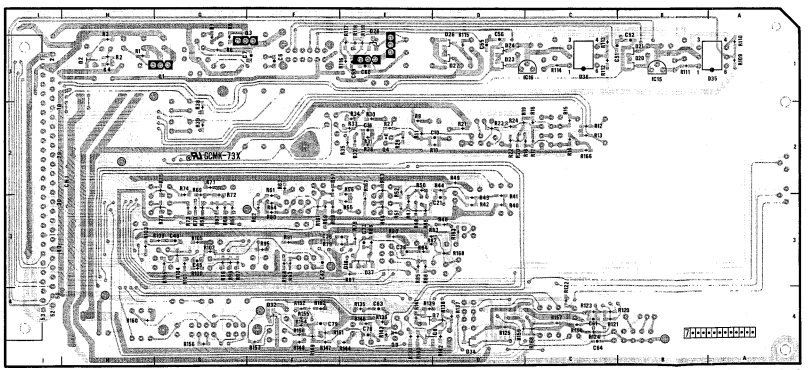
AU-98 BOARD

COMPONENT SIDE



1-624-109-13

SOLDERING SIDE

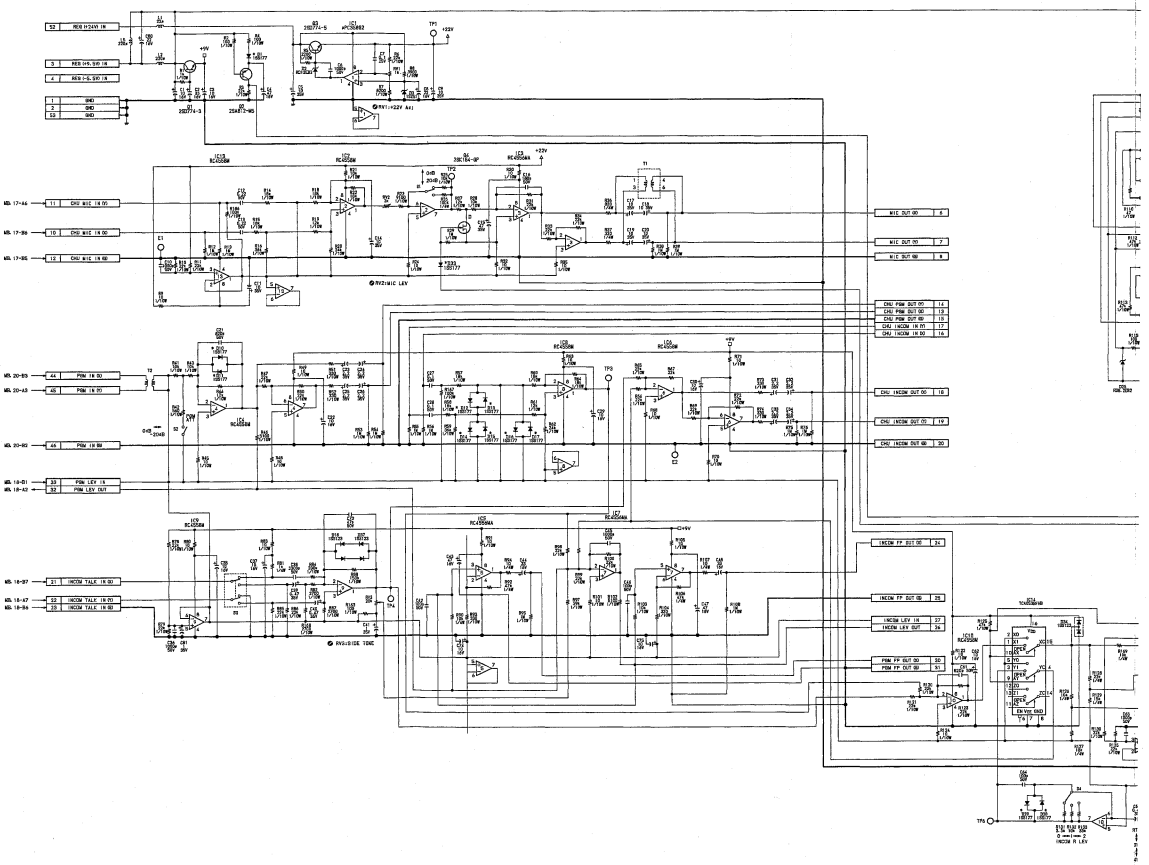


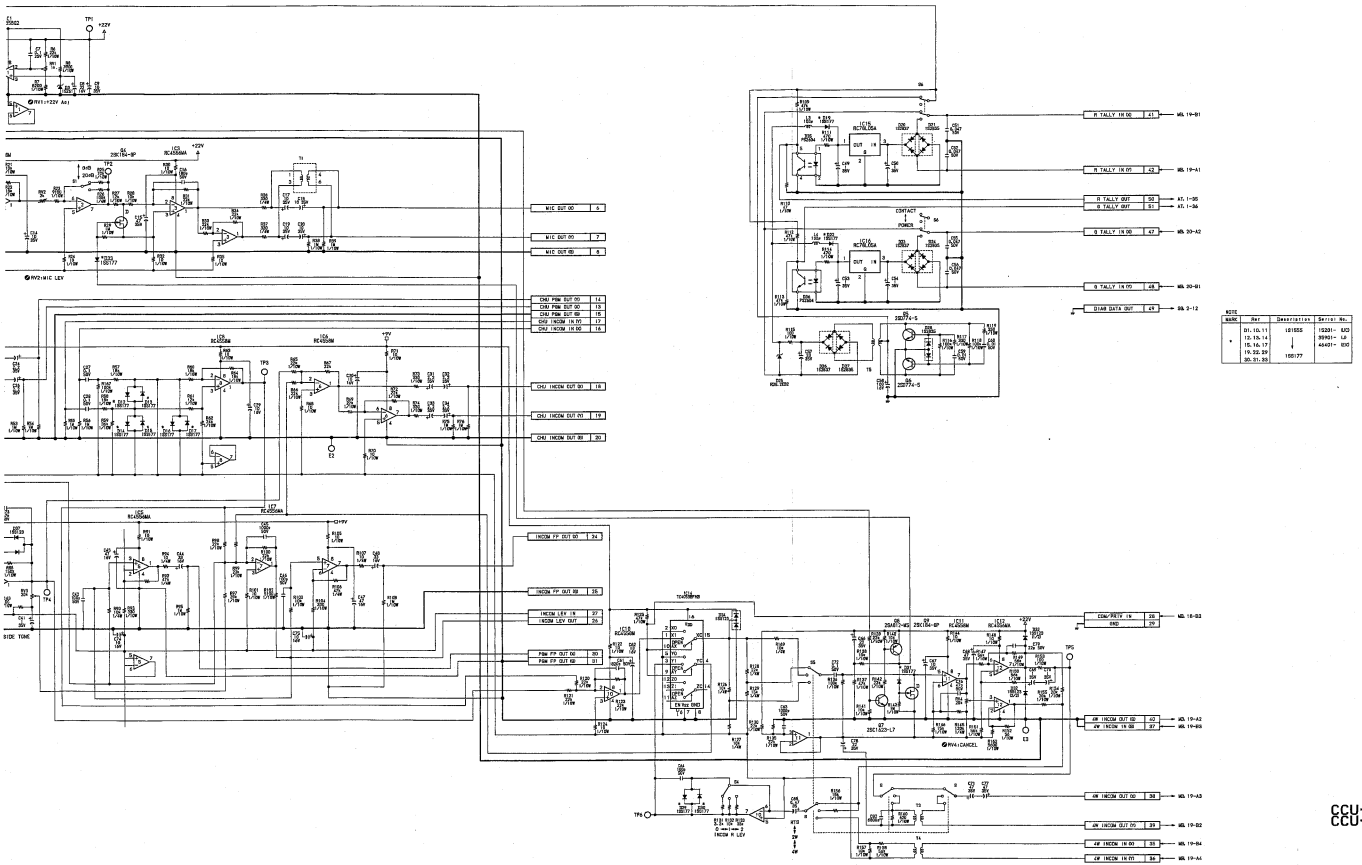
1-624-109-13

AU-98 1-624-109-13

CN1	H-2	IC15	B-1
		IC16	C-1
D1	H-1		
D2	F-1	L1	I-1
D3	G-1	L2	H-1
D10	D-3	L3	B-1
D11	D-3	L4	C-1
D12	F-3	L5	H-1
D13	F-2		
D14	F-3	Q1	G-1
D15	F-3	Q2	H-1
D16	F-3	Q3	F-1
D17	F-3	Q4	E-2
D18	E-3	Q5	E-1
D19	B-1	Q6	E-1
D20	B-1	Q7	D-4
D21	B-1	Q8	D-4
D22	C-1	Q9	E-4
D23	D-1		
D24	D-1	RV1	G-1
D25	D-1	RV2	D-2
D26	D-1	RV3	A-2
D27	D-1	RV4	A-3
D28	E-1		
D29	C-4	S1	D-2
D30	B-4	S2	D-3
D31	E-4	S3	E-3
D32	F-4	S4	B-4
D33	F-2	S5	G-4
D34	D-4	S6	F-1
D35	A-1		
D36	C-1	T2	D-2
D37	E-3	T3	H-4
		T4	C-4
E1	H-1	T5	E-1
E2	H-2		
E3	H-4	TP1	F-1
		TP2	D-2
IC1	G-1	TP3	F-3
IC2	D-2	TP4	F-3
IC3	E-2	TP5	F-4
IC4	E-2	TP6	B-4
IC5	F-3		
IC6	G-2		
IC7	G-3		
IC8	F-2		
IC9	E-3		
IC10	C-4		
IC11	E-4		
IC12	F-4		
IC13	E-2		
IC14	D-4		

AU-98 BOARD: PGM AND INCOM SYSTEM





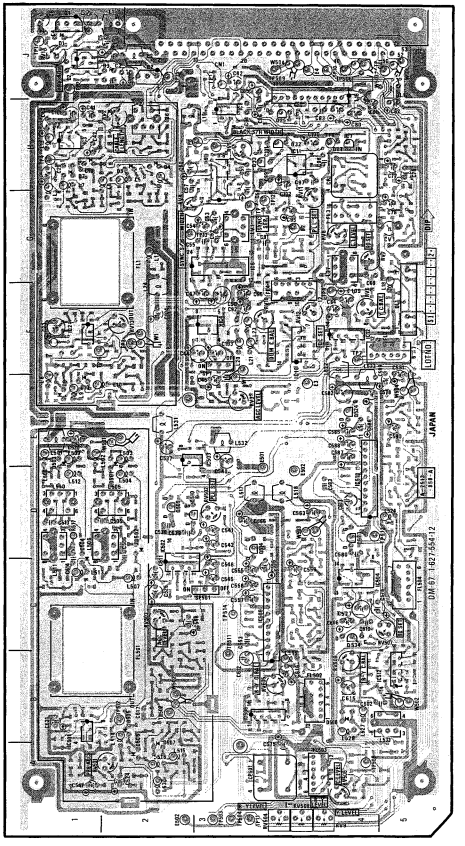
NOTE			
MARK	Ref.	Description	Serial No.
*	31, 10, 11	1S1555	10201- KR
	13, 15, 14		39901- LR
	15, 16, 17		46401- EK
	19, 33, 29	1SS177	
	30, 31, 32		

CCU-355 (UC), (J)
CCU-355P (EK)

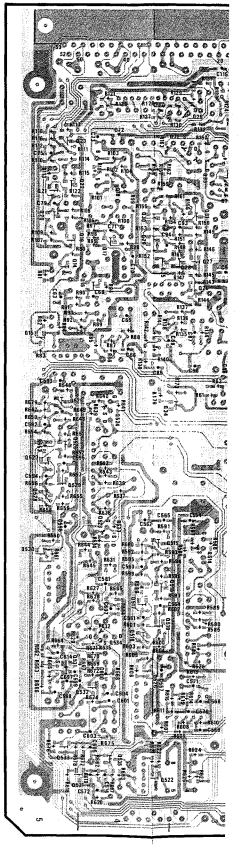
Serial No. 10701 and higher (UC)
30701 and higher (J)
40901 and higher (EK)

DM-67 BOARD

COMPONENT SIDE



SOLDERING SIDE



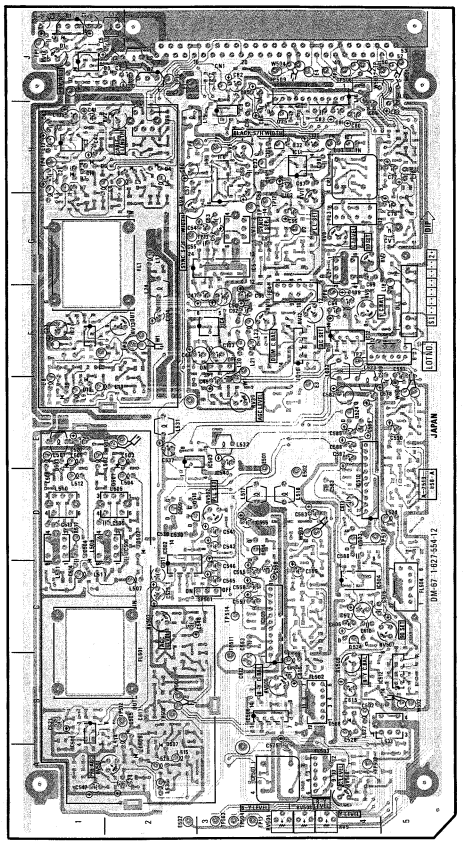
1-627-554-12

SONY-SP01632 / DRUCK: 37

Serial No. 10701 and higher (UC)
30701 and higher (J)
40901 and higher (EK)

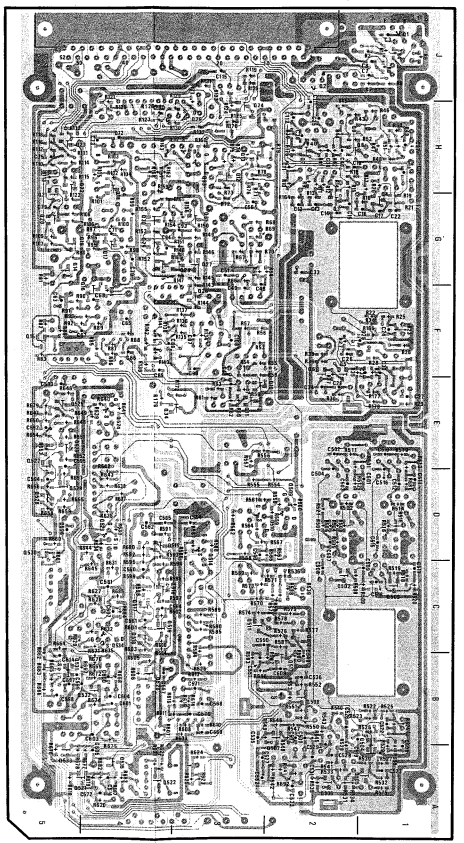
DM-67 BOARD

COMPONENT SIDE



1-627-554-12

SOLDERING SIDE



1-627-554-12

DM-67 1-627-554-12

CN1	J-3	L7	H-1	Q3	G-2	Q522	A-4	TP14	G-3
		L8	E-1	Q4	G-1	Q523	D-4	TP15	J-2
CP1	H-4	L9	E-1	Q5	F-2	Q524	E-4	TP16	F-1
CP501	A-3	L10	E-1	Q6	F-2	Q525	E-5	TP17	J-3
		L11	G-2	Q7	H-2	Q526	E-5	TP501	J-5
DL1	F-5	L13	H-1	Q8	H-2	Q527	E-5	TP502	B-2
		L14	H-2	Q9	H-1	Q528	D-5	TP503	A-3
E1	J-2	L15	H-2	Q10	E-3	Q529	D-5	TP504	A-3
E2	G-4	L16	J-4	Q11	E-3	Q530	D-5	TP506	J-4
E3	E-4	L17	J-5	Q12	H-3	Q531	B-5	TP508	A-4
E4	J-4	L18	G-5	Q13	H-3	Q532	B-4	TP509	J-3
E501	E-3	L20	F-3	Q14	G-5	Q533	A-5	TP511	B-3
E502	A-2	L21	F-3	Q15	F-15	Q534	C-4	TP512	B-2
E502	D-4	L22	F-3	Q16	F-4	Q535	A-4	TP513	D-4
		L23	F-3	Q17	G-4			TP514	C-3
FL1	G-1	L24	F-2	Q18	H-4	RV1	J-1		
FL2	F-5	L25	F-1	Q19	G-5	RV2	H-2	W1	E-3
FL3	G-4	L26	H-2	Q20	G-5	RV4	G-2	W1	F-2
FL4	F-4	L27	G-4	Q21	G-5	RV5	H-3	W501	E-2
FL501	B-2	L501	E-1	Q22	H-5	RV6	F-4	W501	J-5
FL502	B-4	L502	E-1	Q23	H-5	RV7	G-4	W502	B-2
FL503	A-4	L503	E-2	Q24	H-3	RV8	G-4	W502	B-5
FL504	C-5	L504	D-2	Q25	H-3	RV9	A-4	W503	D-4
		L505	D-2	Q26	F-3	RV10	F-3	W503	J-4
IC1	J-1	L506	D-2	Q27	G-3	RV11	G-4	W504	E-5
IC2	F-1	L507	C-2	Q28	G-3	RV12	F-4	W504	J-3
IC3	H-1	L508	E-1	Q29	G-4	RV13	F-2		
IC4	F-3	L509	E-1	Q30	G-4	RV50	A-2		
IC5	G-3	L510	D-1	Q31	G-3	RV502	D-3		
IC6	H-3	L511	D-1	Q32	H-3	RV503	C-2		
IC7	H-4	L512	D-1	Q33	H-3	RV504	A-3		
IC8	H-3	L513	C-1	Q34	E-3	RV505	B-3		
IC9	J-4	L514	B-2	Q35	G-4	RV506	A-4		
IC10	F-4	L515	A-2	Q502	C-2	RV507	C-5		
IC11	H-4	L516	A-2	Q503	C-1	RV508	A-4		
IC12	F-4	L517	D-3	Q504	A-1	RV509	B-4		
IC501	B-1	L518	D-3	Q505	A-1				
IC502	C-2	L519	B-3	Q506	A-2	SP1	F-3		
IC503	E-2	L522	F-4	Q507	B-2	SP501	C-3		
IC504	C-4	L523	E-4	Q508	B-2				
IC505	C-3	L524	D-5	Q509	D-2	TP1	J-1		
IC505	D-2	L527	B-4	Q510	D-2	TP2	J-1		
IC506	B-3	L528	B-4	Q511	C-3	TP3	F-2		
IC510	D-4	L530	A-2	Q512	C-2	TP4	H-1		
IC512	B-5	L531	E-2	Q513	B-2	TP5	H-3		
		L532	E-3	Q514	D-3	TP6	H-3		
L1	J-2	L533	B-5	Q515	D-4	TP7	F-4		
L2	J-2			Q516	C-4	TP8	F-4		
L3	H-1	LV1	G-3	Q517	C-4	TP9	H-4		
L4	H-2			Q518	C-4	TP10	J-4		
L5	H-2	Q1	J-1	Q519	C-4	TP11	A-3		
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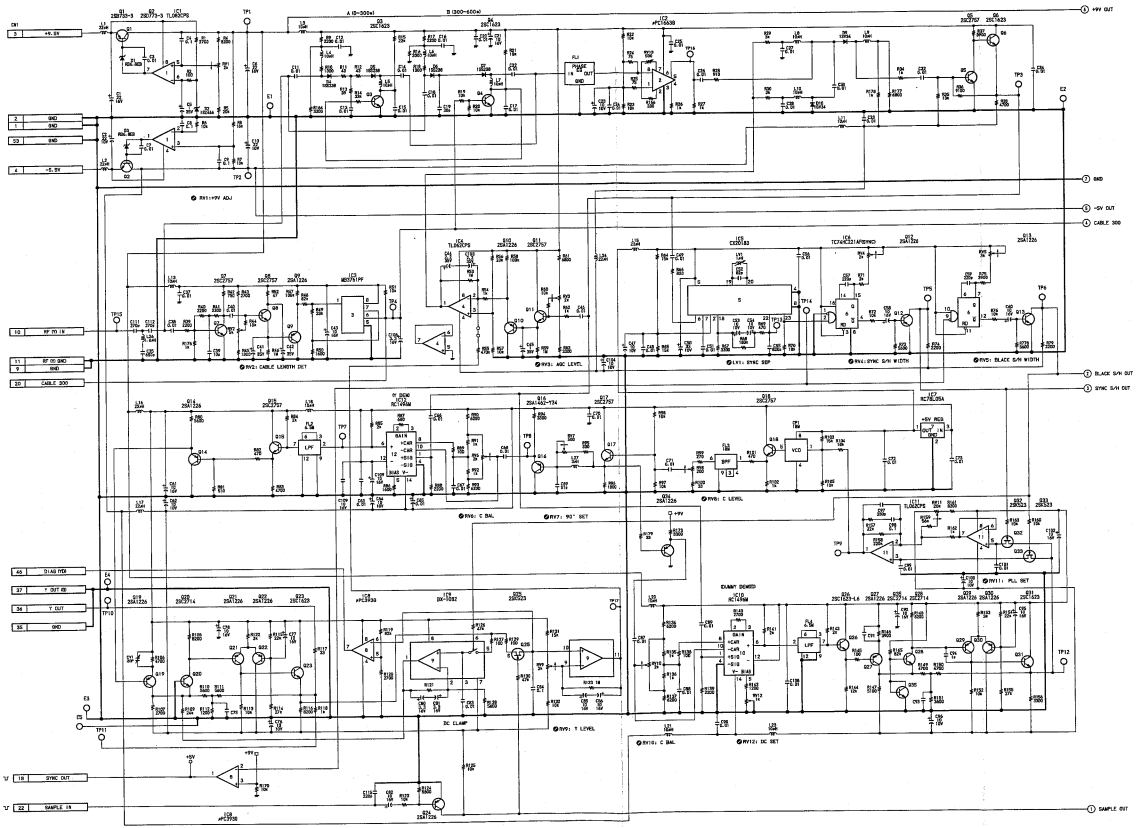
						TP13	G-2		

DM-67 BOARD



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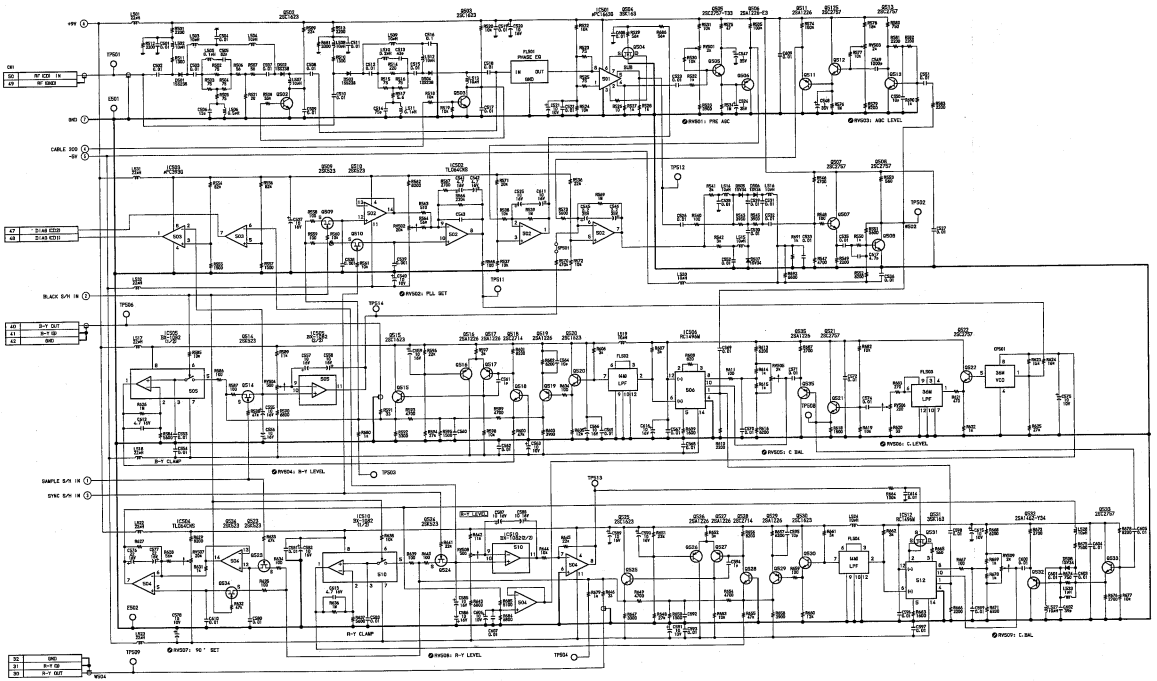
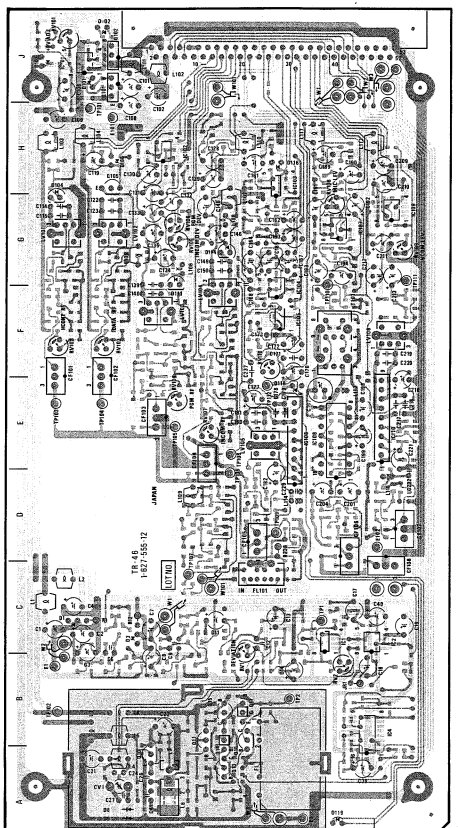
DM-67 BOARD



Serial No. 10401 and higher (UC)
30201 and higher (J)
40501 and higher (EK)

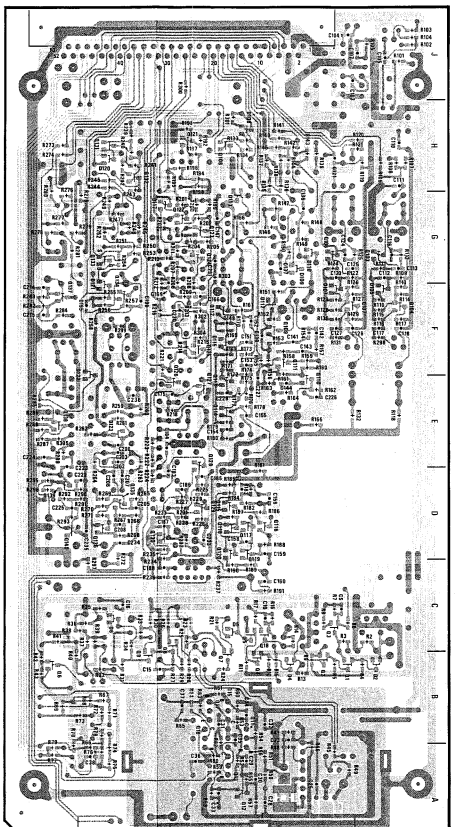
TR-46 BOARD

COMPONENT SIDE



1-627-555-12

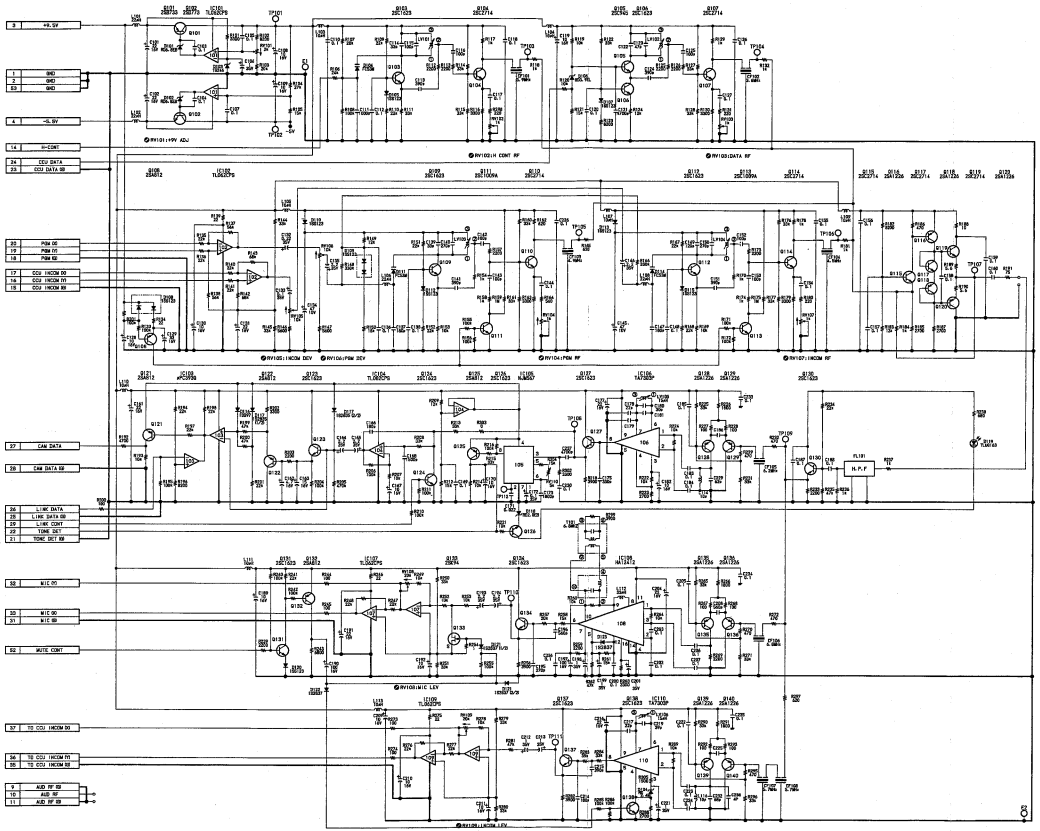
SOLDERING SIDE

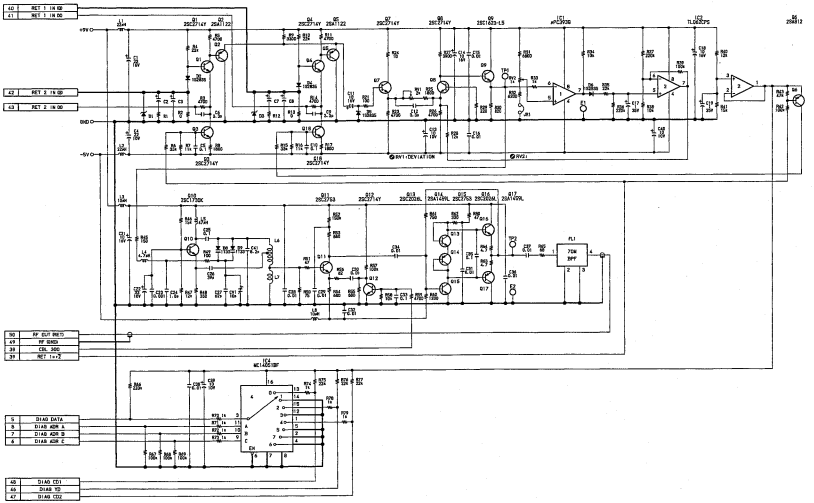


1-627-555-12

TR-46 1-627-555-12

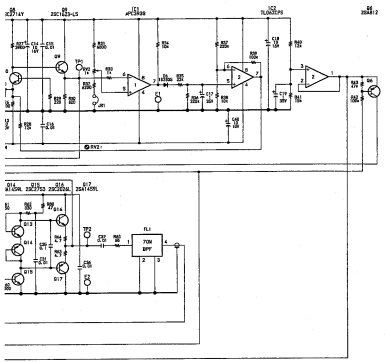
CP101	F-1	L111	H-4	Q122	G-3	W3	A-3
CP102	F-2	L112	E-4	Q123	G-3	W3	J-4
CP103	E-2	L113	H-4	Q124	G-3	W101	C-3
CP104	E-3	L114	D-4	Q125	F-3	W1-1	J-3
CP105	D-3	L115	E-3	Q126	E-3		
CP106	D-4	L116	D-5	Q127	E-3		
CP107	D-5			Q128	E-3		
		LV101	G-1	Q129	D-3		
CV1	A-2	LV102	G-2	Q130	D-4		
		LV103	F-2	Q131	H-4		
E1	B-1	LV104	F-3	Q132	H-4		
E2	A-4	LV105	E-3	Q133	G-4		
E101	H-2	LV106	F-5	Q134	F-4		
E102	D-5			Q135	D-4		
		Q1	B-2	Q136	D-4		
FL1	A-3	Q2	B-2	Q137	F-5		
FL101	C-3	Q3	C-2	Q138	E-5		
		Q4	B-3	Q139	D-5		
IC1	C-4	Q5	C-3	Q140	D-5		
IC2	C-4	Q6	B-5				
IC4	B-4	Q7	B-3	RV1	C-3		
IC101	J-1	Q9	B-4	RV2	B-4		
IC102	H-2	Q10	A-2	RV101	J7-		
IC103	H-3	Q11	B-3	RV102	F-1		
IC104	F-3	Q12	A-3	RV103	F-2		
IC105	F-3	Q13	A-3	RV104	E-21		
IC106	E-4	Q14	B-3	RV105	G-2		
IC107	G-4	Q15	B-3	RV106	G-2		
IC108	E-4	Q16	B-3	RV107	E-3		
IC109	G-5	Q17	B-3	RV108	G-4		
IC110	E-5	Q18	C-2	RV109	G-5		
		Q101	J-2				
JR1	B-4	Q102	J-2	T101	F-4		
		Q103	G-1				
L1	C-1	Q104	F-1	TP1	C-4		
L2	C-1	Q105	H-2	TP2	B-4		
L3	B-1	Q106	G-2	TP101	H-1		
L4	A-2	Q107	F-2	TP102	B-1		
L5	B-2	Q108	H-3	TP103	E-1		
L6	A-2	Q109	F-2	TP104	E-2		
L7	A-2	Q110	E-2	TP105	E-2		
L8	B-2	Q111	F-2	TP106	D-3		
L101	J-2	Q112	F-3	TP107	C-2		
L102	J-2	Q113	E-3	TP108	E-3		
L103	H-1	Q114	E-3	TP109	D-3		
L104	H-1	Q115	D-3	TP110	G-4		
L105	G-2	Q116	D-2	TP111	G-5		
L106	G-2	Q117	D-3				
L107	G-3	Q118	D-3	W1	C-2		
L108	G-3	Q119	D-3	W1	J-4		
L109	D-2	Q120	D-3	W2	C-1		
L110	H-3	Q121	H-3	W2	J-4		





SONY-SP01632 / DRUCK: 45

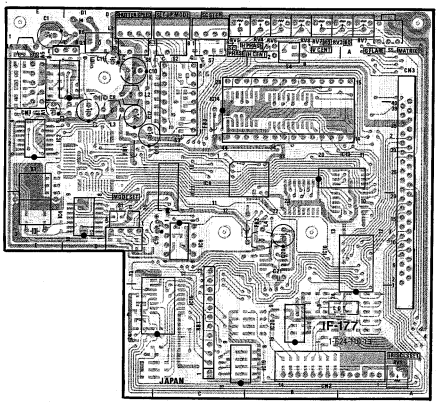
TR-46 (2/2)



FRAME (1/2)

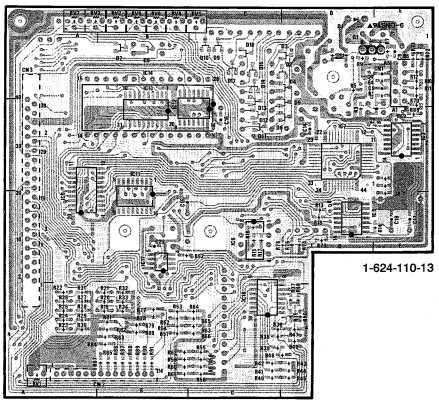
IF-177 BOARD

COMPONENT SIDE



1-624-110-13

SOLDERING SIDE

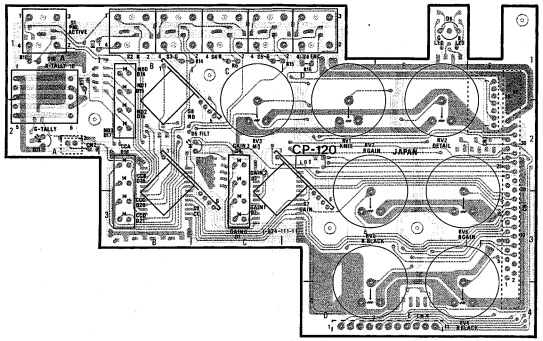


1-624-110-13

C-56

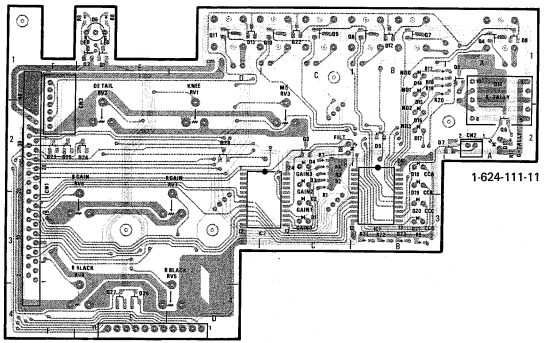
CP-120 BOARD

COMPONENT SIDE



1-624-111-11

SOLDERING SIDE



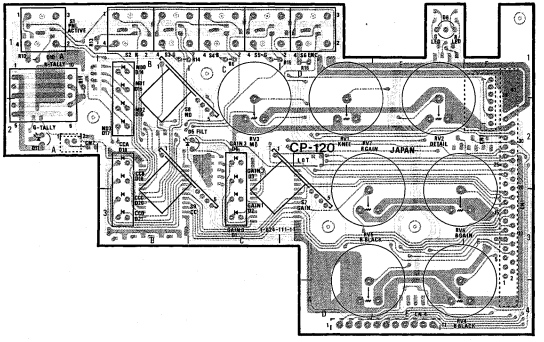
1-624-111-11

C-57

FRAME (1/2) IF-177, CP-120, SW-225
SW-242, SW-266

CP-120 BOARD

COMPONENT SIDE



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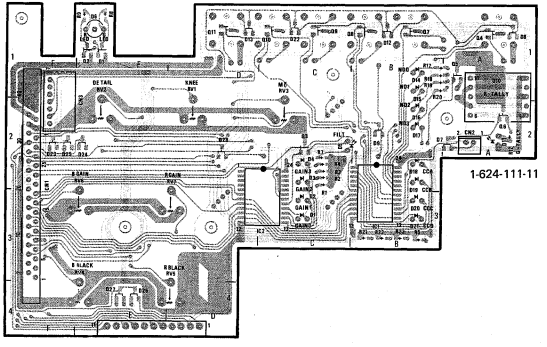
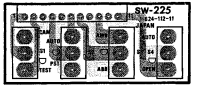


1-624-111-11

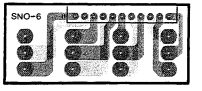
SW-225 BOARD

COMPONENT SIDE



1-624-112-11

SOLDERING SIDE



1-624-112-11

SW-242 BOARD

COMPONENT SIDE

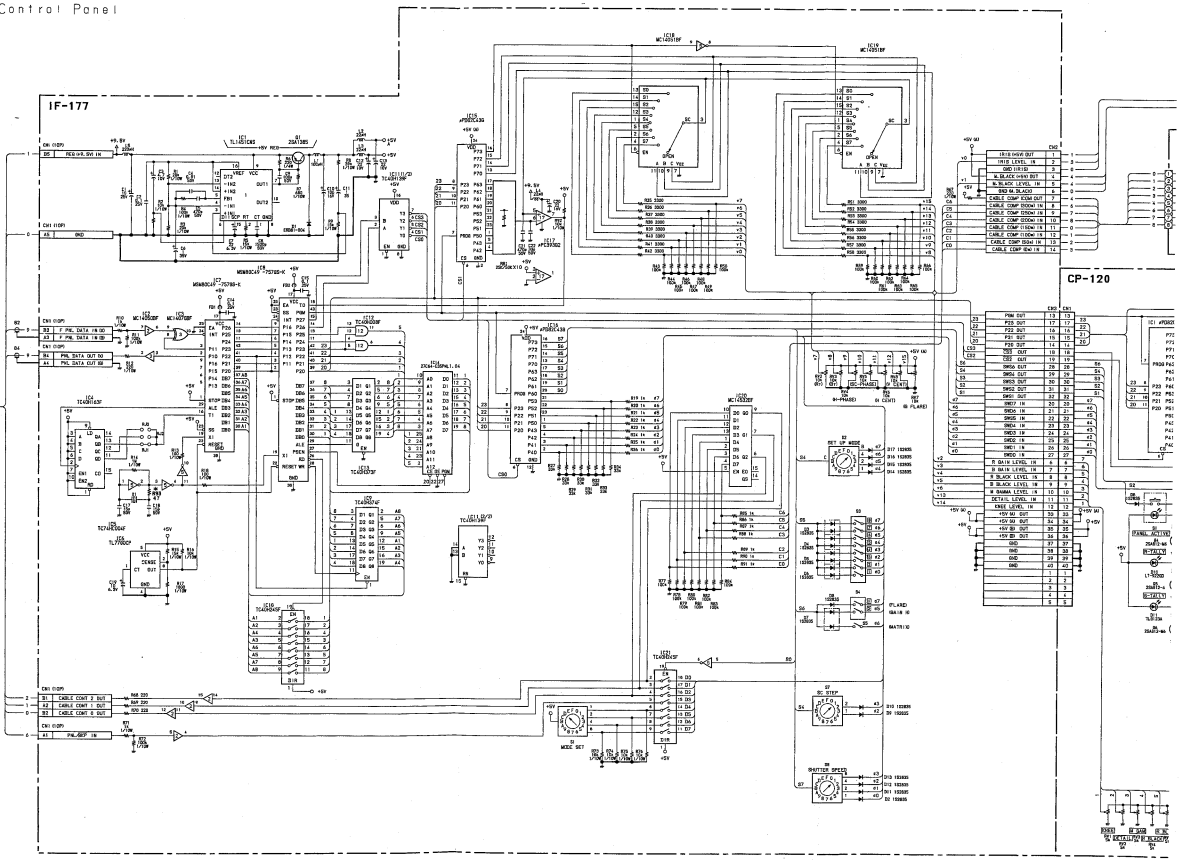
1-624-115-11

SW-266 BOARD

COMPONENT SIDE

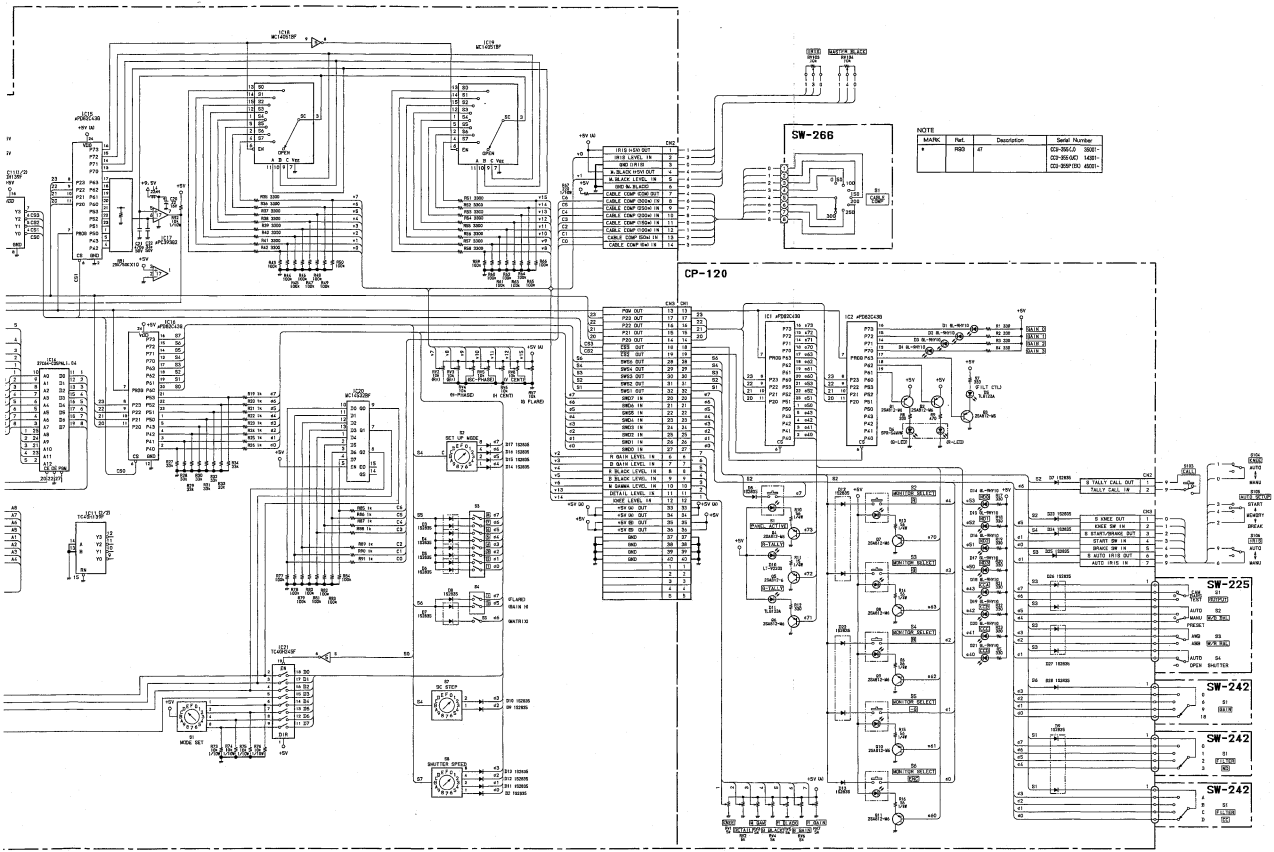
1-624-595-11

CP-120 BOARD : Control Panel
IF-177 BOARD : Interface for Control Panel
SW-225 BOARD : Switch board
SW-242 BOARD : Switch board
SW-266 BOARD : Switch board



CCU-355 (UC) (J)
CCU-355P (EK)
CCU-350 (UC) (J)
CCU-350P (EK)

CP-120 SW-225 SW-266 IF-177 SW-242 FRAME (1/2)



NOTE

MARK	Ref.	Description	Serial Number
*	RGB	J7	CCU-355UC (J) 30001- CCU-355UC (EK) 14001- CCU-355P (EK) 40001-

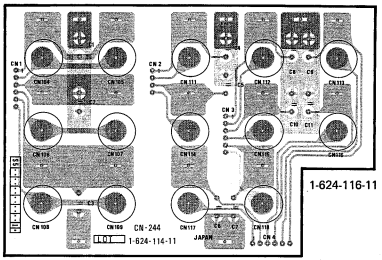
CCU-355 (UC) (J)
CCU-355P (EK)

B-CCU350-IF177M710

FRAME (2/2)

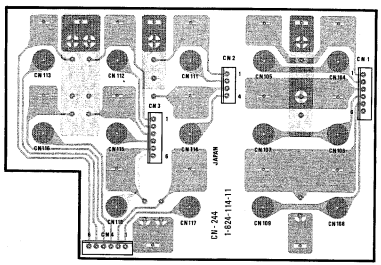
CN-244 BOARD

COMPONENT SIDE



1-624-116-11

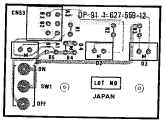
SOLDERING SIDE



1-624-116-11

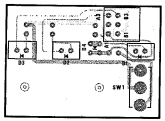
DP-91 BOARD

COMPONENT SIDE



1-627-559-12

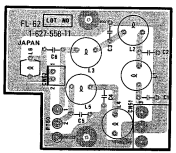
SOLDERING SIDE



1-627-559-12

FL-62 BOARD

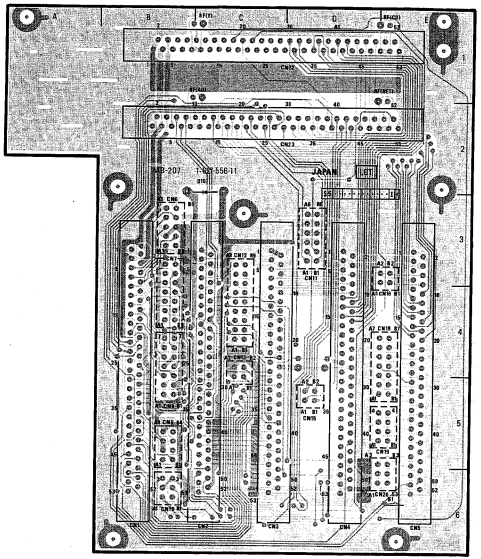
COMPONENT SIDE



1-627-558-11

MB-207 BOARD

COMPONENT SIDE



1-627-556-11

SOLI

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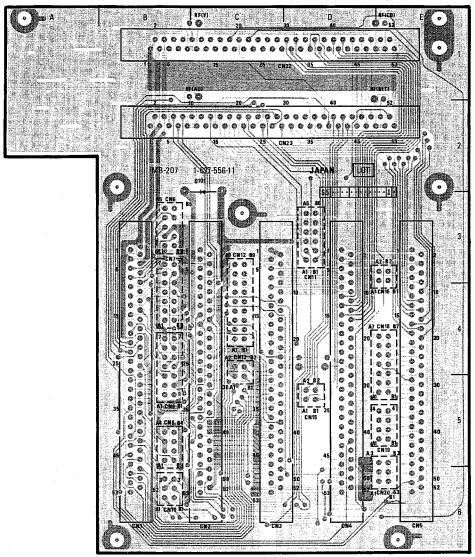
FRAME(2/2) CN-244, DP-91
FL-62, MB-207

MB-207 BOARD

COMPONENT SIDE



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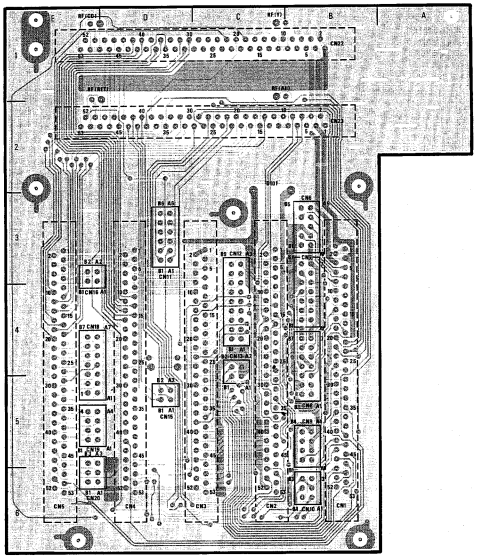
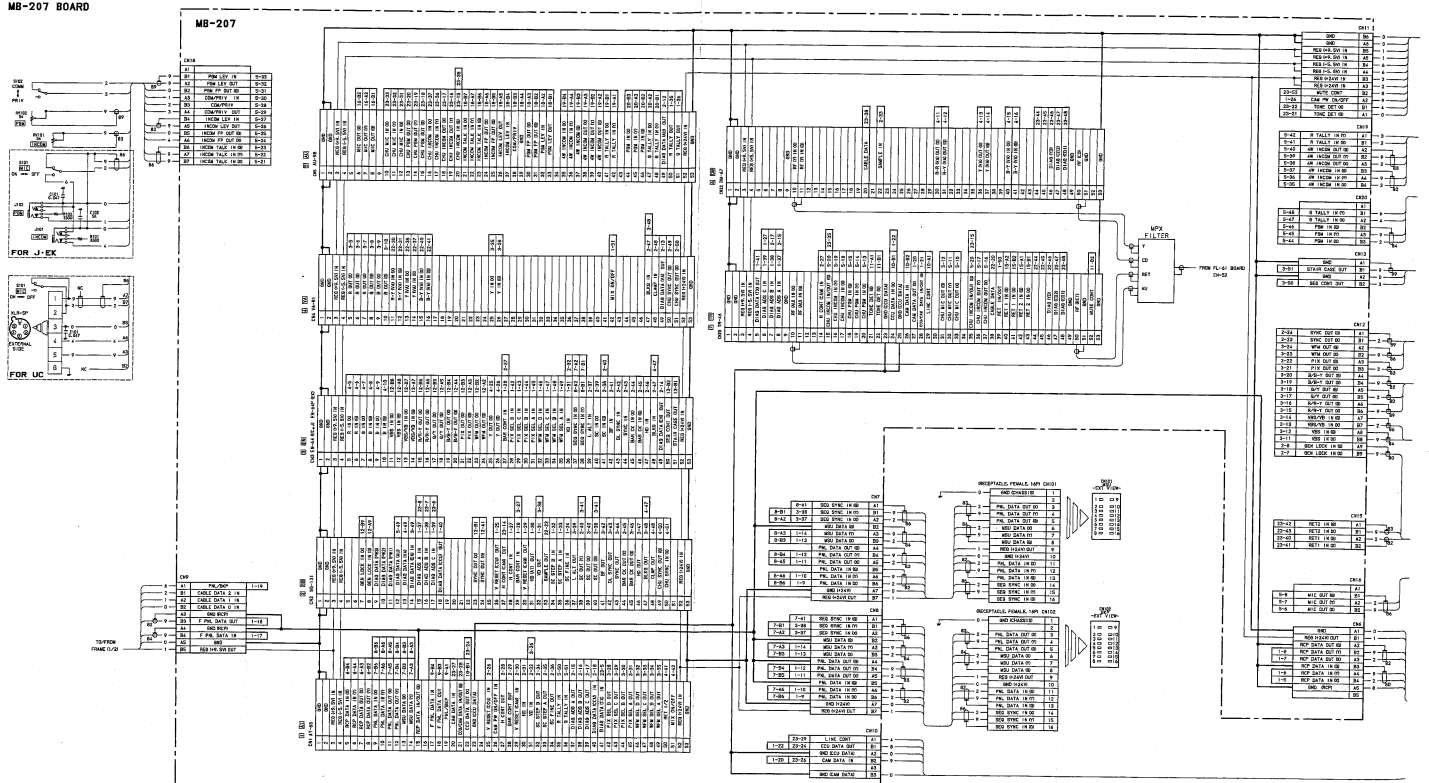


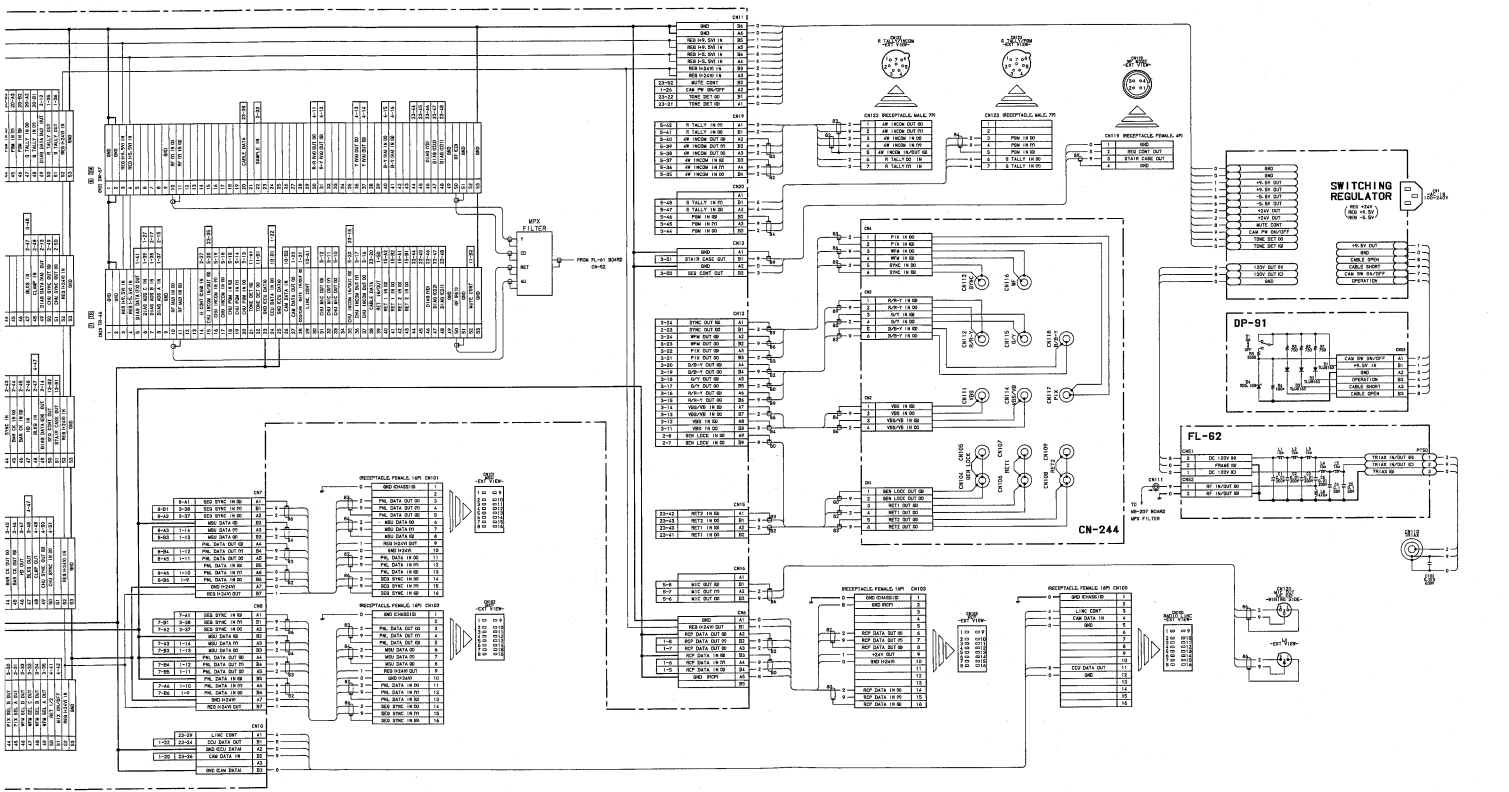
1-627-556-11

FRAME (2/2)
CN-244 BOARD
DP-91 BOARD
FL-62 BOARD
MB-207 BOARD



SONY-SP01632 / DRUCK: 53

CN-244 DP-91 FRAME FL-62 MB-207



SECTION D
SPARE PARTS

D-1. PARTS INFORMATION

1. **Safety Related Component Warning**

   Components identified by shading marked with ⚠ on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service manual supplements published by Sony.

2. Replace Parts that are supplied from Sony Parts Center can sometimes have different shape and external appearance than what are actually used in equipment. This is due to **"accommodating the improved parts and/or engineering changes"** or **"standardization of genuine parts."**

   .This manual's exploded view and electrical spare parts lists are indicating the parts numbers of "the standardized genuine parts at present."

   .Regarding engineering parts and diagrams changes in our engineering department, refer to Sony service bulletins and service manual supplements.

3. **The parts marked with "S" in the SP column** of the exploded views and electical spare parts list are nomally required for routine service work. Orders for parts marked with "0" will be processed, but allow for additional delivery time.

4. Item with no parts number and/or no description are not stocked because they are seldom required for routine service.

5. **Abbreviation**

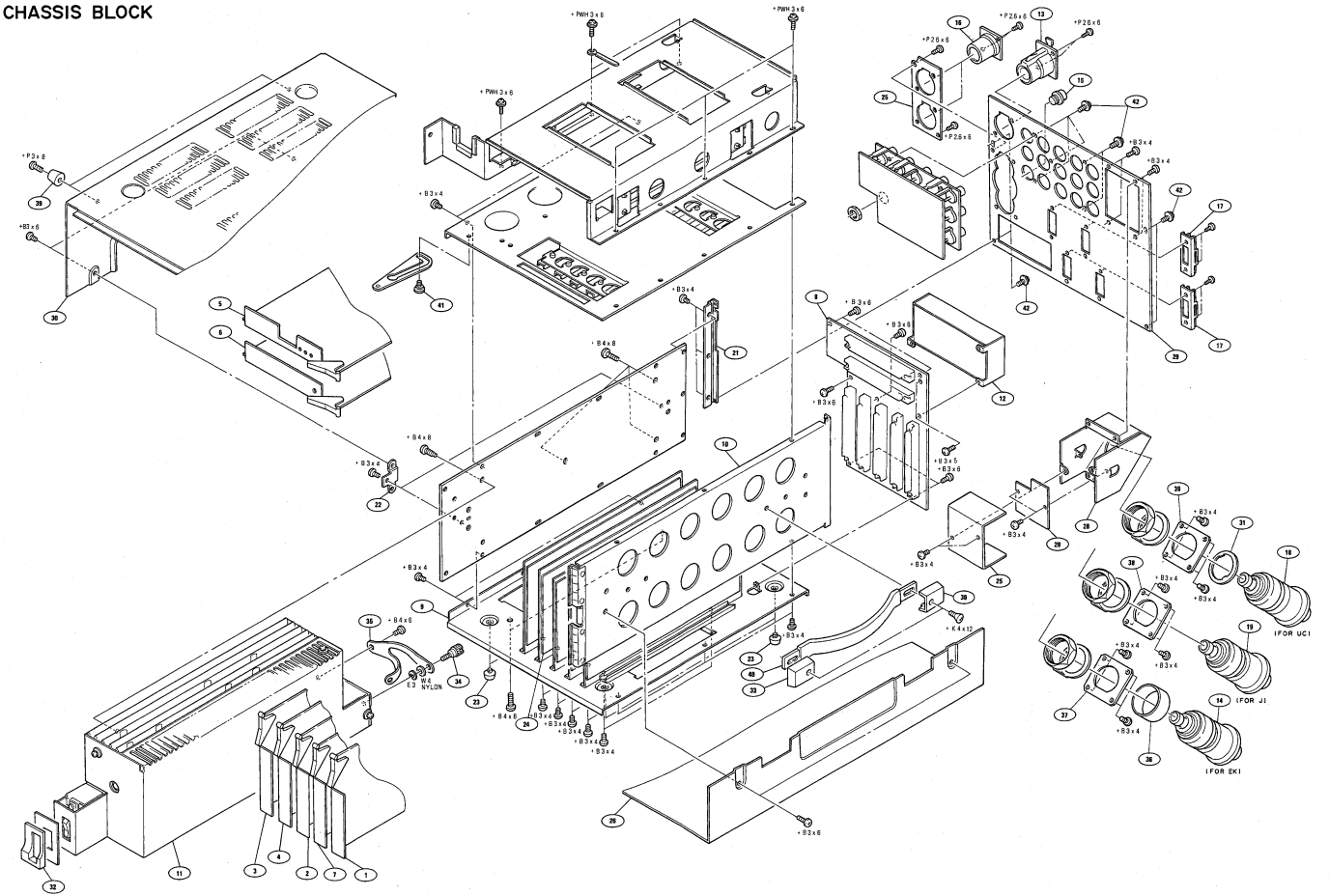
REF.No.	DESCRIPTION	REF.No.	DESCRIPTION	REF.No.	DESCRIPTION
BT	BATTERY	FL	FILTER	RV	VARIABLE RESISTOR
C	CAPACITOR	IC	IC	S	SWITCH
CN	CONNECTOR	L	INDUCTOR	T	TRANSFORMER
CP	COMBINATION PARTS	LV	VARIABLE INDUCTOR	TH	THERMISTOR
CV	VARIABLE CAPACITOR	Q	TRANSISTOR	X	OSCILLATOR
D	DIODE	R	RESISTOR		
DL	DELAY LINE	RB	RESISTOR BLOCK		

All capacitors are in micro farads unless otherwise specified.
All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.

D-2. EXPLODED VIEW
CHASSIS BLOCK

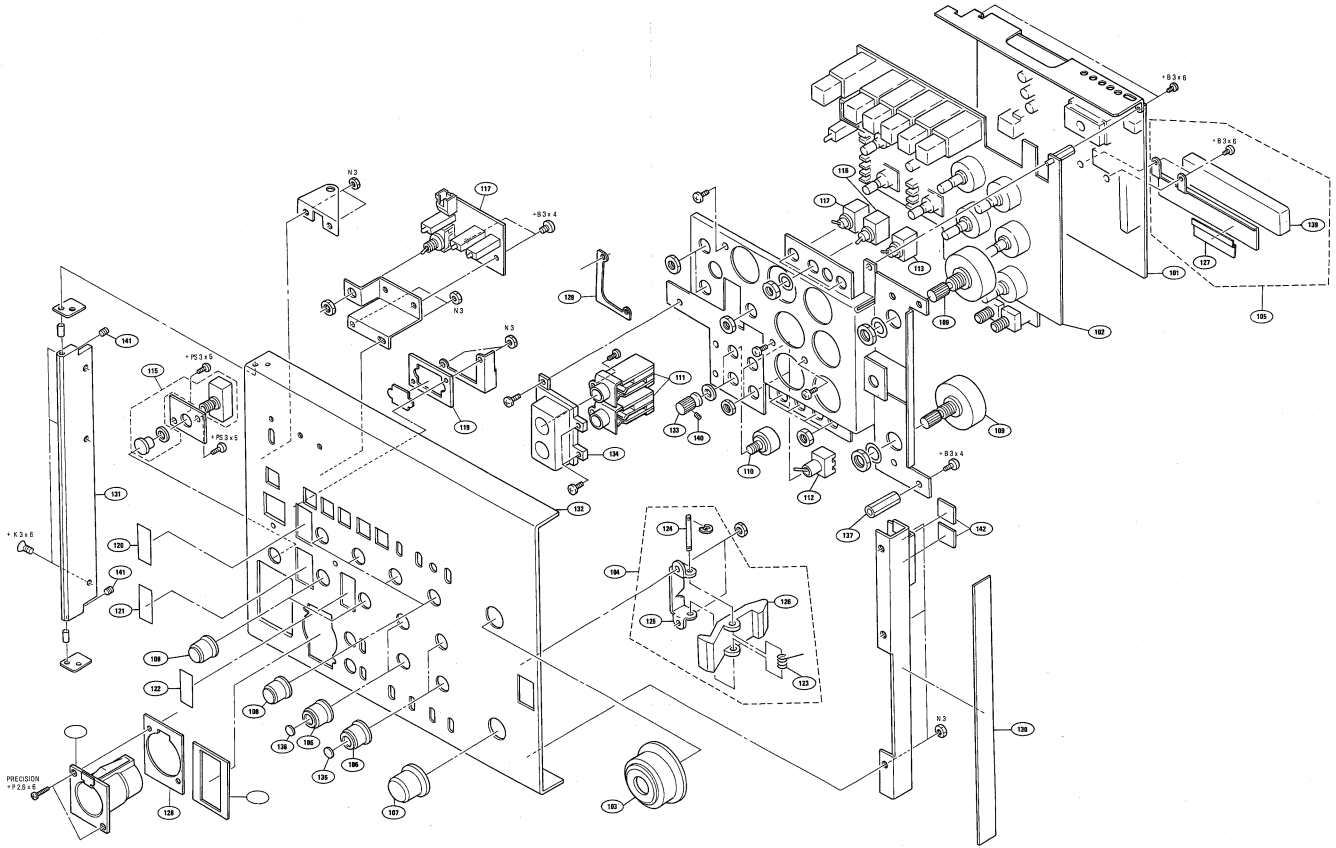
No.	Parts No.	SP	Description
1	A-7513-600-A	o	MOUNTED CIRCUIT BOARD "AU-98"
2	A-7515-002-A	o	MOUNTED CIRCUIT BOARD "EN-64" (FOR J)
	A-7513-602-A	o	MOUNTED CIRCUIT BOARD "EN-64" (FOR UC)
	A-7513-603-A	o	MOUNTED CIRCUIT BOARD "EN-64" (FOR EK)
3	A-7515-337-A	o	MOUNTED CIRCUIT BOARD "AT-66"
4	A-7513-605-A	o	MOUNTED CIRCUIT BOARD "SG-131" (FOR UC,J)
	A-7513-606-A	o	MOUNTED CIRCUIT BOARD "SG-131P" (FOR EK)
5	A-7513-858-A	o	MOUNTED CIRCUIT BOARD "DM-67"
6	A-7513-859-A	o	MOUNTED CIRCUIT BOARD "TR-46"
7	A-7513-860-A	o	MOUNTED CIRCUIT BOARD "VA-81"
8	A-7513-861-A	o	MOUNTED CIRCUIT BOARD "MB-207"
9	X-2355-310-1	o	PLATE ASSY, BOTTOM
10	X-2355-311-3	o	PLATE (R) ASSY, SIDE
11	1-418-194-11	s	SWITCHING REGULATOR
12	1-236-279-11	s	MPX FILTER
13	1-509-184-51	s	RECEPTACLE, FEMALE, 3P, "MIC OUT" (FOR J)
	1-509-176-51	s	RECEPTACLE, MALE, 3P, "MIC OUT" (FOR UC, EK)
14	1-560-744-11	s	RECEPTACLE, COAXIAL, MALE, "CAMERA" (FOR EK)
15	1-561-376-00	s	RECEPTACLE, FEMALE, 4P, "WF MODE"
16	1-561-846-31	s	RECEPTACLE, MALE, 7P, "R TALLY/INCOM" "G TALLY/PGM"
17	1-564-968-11	s	RECEPTACLE, FEMALE, 16P "MSU/CCP" "DATA" "RCP"
18	1-565-796-11	s	RECEPTACLE, DOUBLE COAXIAL "CAMERA" (FOR UC)
19	1-565-798-11	s	RECEPTACLE, DOUBLE COAXIAL "CAMERA" (FOR J)
20	1-627-558-11	o	PRINTED CIRCUIT BOARD "FL-62"
21	2-126-619-01	o	STOPPER, REAR PANEL
22	2-126-620-01	o	STOPPER, COVER
23	2-126-622-01	o	LEG
24	2-126-623-01	o	SHEET, INSULATING
25	2-126-624-01	o	PANEL, XLR, REAR
26	2-126-634-11	o	COVER
27	2-126-664-01	o	CASE, SHIELD, CN
28	2-126-670-01	o	BOX, CN
29	2-126-674-01	o	PANEL, REAR
30	2-126-676-01	o	COVER(T) S/N 10001 - 10320 (UC) S/N 30001 - 10210 (J) S/N 40001 - 10540 (EK)
	2-126-676-02	o	COVER(T) S/N 10401 AND HIGHER (UC) S/N 30301 AND HIGHER (J) S/N 40601 AND HIGHER (EK)
31	2-132-244-01	o	SPACE (FOR UC)
32	2-251-642-00	o	GUARD, POWER SWITCH
33	2-253-306-00	o	TABLE, HANDLE
34	2-270-617-00	s	SCREW, KNOB
35	2-355-381-01	o	CLAMP, CABLE
36	2-361-587-01	o	SLEEVE (FOR EK)
37	2-361-588-01	o	PLATE (F)(2), CONNECTOR (FOR EK)
38	2-365-207-00	o	PLATE (K)(2), CONNECTOR
39	3-143-272-00	s	FOOT, RUBBER
40	3-419-372-21	s	HANDLE
41	3-613-164-00	o	SHAFT, STEP
42	3-719-159-01	s	SCREW (M3), (+BW)
43	2-126-676-02	o	LEG

CHASSIS BLOCK



CCU-355(UC,J)
CCU-355P(EK)

FRONT BLOCK


+B3x6
+B3x6
N2
+B3x4
N3
N3
+PS3x5
+PS3x5
+B3x4
+K3x6
N3
PRECISION
+P2.6x6

FRONT BLOCK

No.	Parts No.	SP	Description
101	A-7513-608-A	o	MOUNTED CIRCUIT BOARD "IF-177"
102	A-7513-609-A	o	MOUNTED CIRCUIT BOARD "CP-120"
103	X-2270-601-0	s	KNOB ASSY
104	X-2355-309-1	o	LOCK ASSY, FRONT
105	X-2355-314-1	o	RETAINER ASSY, PC BOARD
106	X-2355-502-1	s	KBOB ASSY, CONTROL
107	X-3651-342-0	s	KBOB ASSY, CONTROL
108	X-3670-503-0	s	KBOB ASSY, CONTROL
109	1-226-786-00	s	RES, VAR, CERMET 10K "IRIS" "MASTER BLACK"
110	1-230-817-11	s	RES, VAR, CARBON 5K "PGM" "INCOM"
111	1-507-676-00	s	JACK "PGM" "INCOM" (FOR J,EK)
112	1-553-626-00	s	SWITCH, TOGGLE "MIC ON/OFF" "COMM/PRIV"
113	1-553-969-00	s	SWITCH, TOGGLE "KNEE AUTO/MAN" "IRIS AUTO/MAN"
114	1-563-159-11	s	RECEPTACLE, MALE, 5P "INCOM/PGM" (FOR UC)
115	1-570-172-11	s	SWITCH, PUSH (1 KEY) "CALL"
116	1-571-290-11	s	SWITCH, TOGGLE "AUTO SETUP START/BREAK"
117	1-627-559-11	o	PRINTED CIRCUIT BOARD "OP-91"
118	2-126-604-01	o	SHEET, WL (FOR J,EK)
119	2-126-605-01	o	COVER
120	2-126-608-02	o	SHEET, LETTER
121	2-126-608-12	o	SHEET, LETTER
122	2-126-608-22	o	SHEET, LETTER
123	2-126-615-01	o	SPRING, TENSION
124	2-126-616-01	o	SHAFT, LOCK
125	2-126-617-01	o	BRACKET, LOCK
126	2-126-618-01	o	LATCH
127	2-126-652-01	o	SHEET, INSULATING, PCB RETAINER
128	2-126-658-01	o	SHEET, XLR (FOR UC)
129	2-126-659-01	o	NUT (INCOM), PLATE (FOR UC)
130	2-126-661-01	o	PLATE (LARGE), ORNAMENTAL, SIDE
131	2-126-669-01	o	HINGE (LARGE)
132	2-126-671-03	o	PANEL, FRONT
133	2-270-649-00	s	KNOB, A
134	2-270-650-00	o	INSULATOR (FOR J,EK)
135	2-270-659-00	s	MARKER (B)
136	2-270-660-00	s	MARKER (R)
137	2-280-622-31	o	SUPPORT (M3x12), HEXAGON
139	2-355-399-01	o	CUSHION, PC BOARD RETAINER
140	3-701-505-00	s	SET SCREW, DOUBLE POINT 3x3
141	3-701-509-00	s	SET SCREW, DOUBLE CUP 3x8
142	9-911-844-xx	o	CUSHION, SA PC BOARD

SCREW

+RK
Cr-N

7-682-000-00

SIZE	Parts No.
3 x 4	345-04
x 5	346-04
x 6	348-04
x 10	349-04
x 12	350-04
x 14	351-04
x 16	352-04
x 20	353-04
4 x 6	360-04
x 8	361-04
x 10	362-04
x 12	363-04
x 14	364-04
x 16	365-04
x 20	366-04
5 x 8	374-04
x 10	375-04
x 12	376-04
x 14	377-04
x 16	378-04
x 20	379-04

+S
Cr-N

7-682-000-00

SIZE	Parts No.
3 x 3	544-04
x 4	545-04
x 5	546-04
x 6	547-04
x 8	548-04
x 10	549-04
x 12	550-04
x 14	551-04
x 16	552-04
x 20	553-04
4 x 4	558-04
x 5	559-04
x 6	560-04
x 8	561-04
x 10	562-04
x 12	563-04
x 14	564-04
x 16	565-04
x 20	566-04
5 x 8	574-04
x 10	575-04
x 12	576-04
x 14	577-04
x 16	578-04
x 20	579-04

+PWH

7-682-000-00

SIZE	Parts No.
2.6 x 4	903-11
x 5	902-21
x 6	902-31
x 10	–
x 12	902-51
x 14	–
3 x 5	903-91
x 6	903-11
x 8	903-21
x 10	903-31
x 12	903-41
x 14	–
4 x 6	904-01
x 8	904-11
x 10	904-21
x 12	904-31
x 14	904-41
x 16	–
x 20	–

PRECISION +P
Stn-N

7-627-030-00

SIZE	Parts No.
1.7 x 1.6	552-19
x 1.8	–
x 2	552-28
x 2.2	–
x 2.5	552-98
x 2.8	–
x 3	552-38
x 3.5	552-78
x 4	552-48
x 4.5	–
x 5	552-58
x 5.5	–
2 x 1.8	554-38
x 2	552-18
x 2.2	–
x 2.5	553-28
x 2.8	554-88
x 3	553-38
x 3.5	554-18
x 4	553-48
x 4.5	553-68
x 5	554-28
x 5.5	–
x 6	553-68
x 7	553-88
x 8	553-98
x 10	553-78
2.6 x 2.8	556-08
x 3	–
x 3.5	556-28
x 4	556-38
x 4.5	556-48
x 5	556-58
x 5.5	–
x 6	556-78
x 7	–
x 8	–
x 9	–
x 10	–

PRECISION +P
Cr-N

7-627-000-00

SIZE	Parts No.
1.7 x 1.6	–
x 1.8	–
x 2	552-27
x 2.2	552-97
x 2.5	552-07
x 2.8	–
x 3	552-37
x 3.5	–
x 4	552-47
x 4.5	552-67
x 5	552-57
x 5.5	557-07
x 6	552-77
2 x 1.8	554-37
x 2	553-17
x 2.2	554-07
x 2.5	553-27
x 2.8	–
x 3	553-37
x 3.5	554-17
x 4	553-47
x 4.5	553-57
x 5	553-67
x 5.5	–
x 6	554-27
x 7	553-87
x 8	553-97
x 10	553-77
2.6 x 2.8	556-07
x 3	–
x 3.5	–
x 4	556-37
x 4.5	–
x 5	556-57
x 5.5	–
x 6	556-77
x 7	–
x 8	556-97
x 9	–
x 10	557-47

+PS
Stn-N

7-682-000-00

SIZE	Parts No.
2 x 4	253-09
x 5	253-10
x 6	253-20
x 8	253-30
x 10	253-40
x 12	253-50
2.6 x 4	253-90
x 5	254-00
x 6	254-10
x 8	254-23
x 10	254-33
x 12	254-43
x 14	254-53
x 16	254-63
x 20	254-80
3 x 5	848-09
x 6	847-09
x 8	848-09
x 10	849-09
x 12	850-09
x 14	851-09
x 16	852-09
x 20	–
4 x 6	–
x 8	–
x 10	–
x 12	–
x 14	–
x 16	–
x 20	–

+S
Stn-N

7-682-000-00

SIZE	Parts No.
3 x 3	544-09
x 4	545-09
x 5	546-09
x 6	547-09
x 8	548-09
x 10	549-09
x 12	550-09
x 14	551-09
x 16	552-09
x 20	553-09
4 x 4	558-09
x 5	559-09
x 6	560-09
x 8	561-09
x 10	562-09
x 12	563-09
x 14	564-09
x 16	565-09
x 20	566-09
5 x 8	574-09
x 10	575-09
x 12	576-09
x 14	577-09
x 16	578-09
x 20	579-09

+P
Cr-N

7-682-000-00

SIZE	Parts No.
3 x 3	144-01
x 4	145-01
x 5	146-01
x 6	147-01
x 8	148-01
x 10	149-01
x 12	150-01
x 14	151-01
x 16	152-01
4 x 4	158-01
x 5	159-01
x 6	160-01
x 8	161-01
x 10	162-01
x 12	163-01
x 14	164-01
x 16	165-01
x 20	166-01

+K
Cr-N

7-682-000-00

SIZE	Parts No.
3 x 4	245-04
x 5	246-04
x 6	247-04
x 8	248-04
x 10	249-04
x 12	250-04
x 14	251-04
x 16	252-04
x 20	253-04
4 x 6	260-04
x 8	261-04
x 10	262-04
x 12	263-04
x 14	264-04
x 16	265-04
x 20	266-04

D-3. ELECTRICAL PARTS LIST

CAPACITOR, TANTALUM

Part No.	SP	Description			
1-131-396-11	s	TANTALUM	0.01	20%	35V
1-131-397-11	s	TANTALUM	0.015	20%	35V
1-131-398-11	s	TANTALUM	0.022	20%	35V
1-131-399-11	s	TANTALUM	0.033	20%	35V
1-131-400-11	s	TANTALUM	0.047	20%	35V
1-131-401-21	s	TANTALUM	0.068	10%	35V
1-131-341-21	s	TANTALUM	0.1	10%	35V
1-131-342-21	s	TANTALUM	0.15	10%	35V
1-131-343-21	s	TANTALUM	0.22	10%	35V
1-131-344-21	s	TANTALUM	0.33	10%	35V
1-131-412-11	s	TANTALUM	0.47	20%	20V
1-131-345-21	s	TANTALUM	0.47	10%	35V
1-131-410-11	s	TANTALUM	0.68	20%	25V
1-131-346-21	s	TANTALUM	0.68	10%	35V
1-131-413-11	s	TANTALUM	1.0	20%	20V
1-131-347-21	s	TANTALUM	1.0	10%	35V
1-131-416-11	s	TANTALUM	1.5	20%	16V
1-131-348-21	s	TANTALUM	1.5	10%	35V
1-131-419-11	s	TANTALUM	2.2	20%	10V
1-131-361-21	s	TANTALUM	2.2	10%	20V
1-131-349-21	s	TANTALUM	2.2	10%	35V
1-131-422-11	s	TANTALUM	3.3	20%	6.3V
1-131-368-21	s	TANTALUM	3.3	10%	16V
1-131-356-21	s	TANTALUM	3.3	10%	25V
1-131-350-21	s	TANTALUM	3.3	10%	35V
1-131-425-11	s	TANTALUM	4.7	20%	3.15V
1-131-375-21	s	TANTALUM	4.7	10%	10V
1-131-363-21	s	TANTALUM	4.7	10%	20V
1-131-351-21	s	TANTALUM	4.7	10%	35V
1-131-382-21	s	TANTALUM	6.8	10%	6.3V
1-131-370-21	s	TANTALUM	6.8	10%	16V
1-131-358-21	s	TANTALUM	6.8	10%	25V
1-131-352-21	s	TANTALUM	6.8	10%	35V
1-131-389-11	s	TANTALUM	10	10%	3.15V
1-131-377-21	s	TANTALUM	10	10%	10V
1-131-365-21	s	TANTALUM	10	10%	20V
1-131-353-21	s	TANTALUM	10	10%	35V
1-131-384-21	s	TANTALUM	15	10%	6.3V
1-131-372-21	s	TANTALUM	15	10%	16V
1-131-360-21	s	TANTALUM	15	10%	25V
1-131-391-21	s	TANTALUM	22	10%	3.15V
1-131-379-21	s	TANTALUM	22	10%	10V
1-131-367-21	s	TANTALUM	22	10%	20V
1-131-386-21	s	TANTALUM	33	10%	6.3V
1-131-374-21	s	TANTALUM	33	10%	16V
1-131-393-21	s	TANTALUM	47	10%	3.15V
1-131-381-21	s	TANTALUM	47	10%	10V
1-131-388-11	s	TANTALUM	68	10%	6.3V
1-131-395-21	s	TANTALUM	100	10%	3.15V

Part No.	SP	Description			
1-163-083-00	s	CHIP CERAMIC	1pF	±0.25pF	50V
1-163-085-00	s	CHIP CERAMIC	2pF	±0.25pF	50V
1-163-087-00	s	CHIP CERAMIC	4pF	±0.25pF	50V
1-163-089-00	s	CHIP CERAMIC	6pF	±0.5pF	50V
1-163-091-00	s	CHIP CERAMIC	8pF	±0.5pF	50V
1-163-093-00	s	CHIP CERAMIC	10pF	5%	50V
1-163-097-00	s	CHIP CERAMIC	15pF	5%	50V
1-163-101-00	s	CHIP CERAMIC	22pF	5%	50V
1-163-105-00	s	CHIP CERAMIC	33pF	5%	50V
1-163-109-00	s	CHIP CERAMIC	47pF	5%	50V
1-163-113-00	s	CHIP CERAMIC	68pF	5%	50V
1-163-117-00	s	CHIP CERAMIC	100pF	5%	50V
1-163-121-00	s	CHIP CERAMIC	150pF	5%	50V
1-163-125-00	s	CHIP CERAMIC	220pF	5%	50V
1-163-129-00	s	CHIP CERAMIC	330pF	5%	50V
1-163-133-00	s	CHIP CERAMIC	470pF	5%	50V
1-163-137-00	s	CHIP CERAMIC	680pF	5%	50V
1-163-141-00	s	CHIP CERAMIC	1000pF	5%	50V
1-163-145-00	s	CHIP CERAMIC	1500pF	10%	50V
1-163-013-00	s	CHIP CERAMIC	2200pF	10%	50V
1-163-015-00	s	CHIP CERAMIC	3300pF	10%	50V
1-163-017-00	s	CHIP CERAMIC	4700pF	10%	50V
1-163-019-00	s	CHIP CERAMIC	6800pF	10%	50V
1-163-021-00	s	CHIP CERAMIC	0.01	10%	50V
1-163-023-00	s	CHIP CERAMIC	0.015	10%	50V
1-163-034-00	s	CHIP CERAMIC	0.033		50V
1-163-035-00	s	CHIP CERAMIC	0.047		50V
1-163-036-00	s	CHIP CERAMIC	0.068		50V
1-163-038-00	s	CHIP CERAMIC	0.1		50V

RESISTOR, CARBON

Part No.	SP	Description
1-249-381-11	s	RES, CARBON 1.0 5% 1/6W
1-249-382-11	s	RES, CARBON 1.2 5% 1/6W
1-249-383-11	s	RES, CARBON 1.5 5% 1/6W
1-249-384-11	s	RES, CARBON 1.8 5% 1/6W
1-249-385-11	s	RES, CARBON 2.2 5% 1/6W
1-249-386-11	s	RES, CARBON 2.7 5% 1/6W
1-249-387-11	s	RES, CARBON 3.3 5% 1/6W
1-249-388-11	s	RES, CARBON 3.9 5% 1/6W
1-249-389-11	s	RES, CARBON 4.7 5% 1/6W
1-249-390-11	s	RES, CARBON 5.6 5% 1/6W
1-249-391-11	s	RES, CARBON 6.8 5% 1/6W
1-249-392-11	s	RES, CARBON 8.2 5% 1/6W
1-249-393-11	s	RES, CARBON 10 5% 1/6W
1-249-394-11	s	RES, CARBON 12 5% 1/6W
1-249-395-11	s	RES, CARBON 15 5% 1/6W
1-249-396-11	s	RES, CARBON 18 5% 1/6W
1-249-397-11	s	RES, CARBON 22 5% 1/6W
1-249-398-11	s	RES, CARBON 27 5% 1/6W
1-249-399-11	s	RES, CARBON 33 5% 1/6W
1-249-400-11	s	RES, CARBON 39 5% 1/6W
1-249-401-11	s	RES, CARBON 47 5% 1/6W
1-249-402-11	s	RES, CARBON 56 5% 1/6W
1-249-403-11	s	RES, CARBON 68 5% 1/6W
1-215-394-00	s	RES, METAL 75 1% 1/6W
1-249-404-11	s	RES, CARBON 82 5% 1/6W
1-249-405-11	s	RES, CARBON 100 5% 1/6W
1-249-406-11	s	RES, CARBON 120 5% 1/6W
1-249-407-11	s	RES, CARBON 150 5% 1/6W
1-249-408-11	s	RES, CARBON 180 5% 1/6W
1-249-409-11	s	RES, CARBON 220 5% 1/6W
1-249-410-11	s	RES, CARBON 270 5% 1/6W
1-249-411-11	s	RES, CARBON 330 5% 1/6W
1-249-412-11	s	RES, CARBON 390 5% 1/6W
1-249-413-11	s	RES, CARBON 470 5% 1/6W
1-249-414-11	s	RES, CARBON 560 5% 1/6W
1-249-415-11	s	RES, CARBON 680 5% 1/6W
1-249-416-11	s	RES, CARBON 820 5% 1/6W
1-249-417-11	s	RES, CARBON 1.0k 5% 1/6W
1-249-418-11	s	RES, CARBON 1.2k 5% 1/6W
1-249-419-11	s	RES, CARBON 1.5k 5% 1/6W
1-249-420-11	s	RES, CARBON 1.8k 5% 1/6W
1-249-421-11	s	RES, CARBON 2.2k 5% 1/6W
1-249-422-11	s	RES, CARBON 2.7k 5% 1/6W
1-249-423-11	s	RES, CARBON 3.3k 5% 1/6W
1-249-424-11	s	RES, CARBON 3.9k 5% 1/6W
1-249-425-11	s	RES, CARBON 4.7k 5% 1/6W
1-249-426-11	s	RES, CARBON 5.6k 5% 1/6W
1-249-427-11	s	RES, CARBON 6.8k 5% 1/6W
1-249-428-11	s	RES, CARBON 8.2k 5% 1/6W
1-249-429-11	s	RES, CARBON 10k 5% 1/6W
1-249-430-11	s	RES, CARBON 12k 5% 1/6W
1-249-431-11	s	RES, CARBON 15k 5% 1/6W
1-249-432-11	s	RES, CARBON 18k 5% 1/6W
1-249-433-11	s	RES, CARBON 22k 5% 1/6W
1-249-434-11	s	RES, CARBON 27k 5% 1/6W
1-249-435-11	s	RES, CARBON 33k 5% 1/6W
1-249-436-11	s	RES, CARBON 39k 5% 1/6W
1-249-437-11	s	RES, CARBON 47k 5% 1/6W
1-249-438-11	s	RES, CARBON 56k 5% 1/6W
1-249-439-11	s	RES, CARBON 68k 5% 1/6W
1-249-440-11	s	RES, CARBON 82k 5% 1/6W
1-249-441-11	s	RES, CARBON 100k 5% 1/6W
1-215-471-00	s	RES, METAL 120k 1% 1/6W
1-215-473-00	s	RES, METAL 150k 1% 1/6W
1-215-475-00	s	RES, METAL 180k 1% 1/6W
1-215-477-00	s	RES, METAL 220k 1% 1/6W
1-215-479-00	s	RES, METAL 270k 1% 1/6W
1-215-481-00	s	RES, METAL 330k 1% 1/6W
1-215-483-00	s	RES, METAL 390k 1% 1/6W
1-215-485-00	s	RES, METAL 470k 1% 1/6W
1-215-487-00	s	RES, METAL 560k 1% 1/6W
1-215-489-00	s	RES, METAL 680k 1% 1/6W
1-215-491-00	s	RES, METAL 820k 1% 1/6W
1-215-493-00	s	RES, METAL 1.0M 1% 1/6W

RESISTOR, CHIP

Part No.	SP	Description
1-216-295-00	s	RES, CHIP 0 5% 1/10W
1-216-298-00	s	RES, CHIP 2.2 5% 1/10W
1-216-302-00	s	RES, CHIP 2.7 5% 1/10W
1-216-304-00	s	RES, CHIP 3.3 5% 1/10W
1-216-306-00	s	RES, CHIP 3.9 5% 1/10W
1-216-308-00	s	RES, CHIP 4.7 5% 1/10W
1-216-309-00	s	RES, CHIP 5.6 5% 1/10W
1-216-311-00	s	RES, CHIP 6.8 5% 1/10W
1-216-313-00	s	RES, CHIP 8.2 5% 1/10W
1-216-001-00	s	RES, CHIP 10 5% 1/10W
1-216-003-00	s	RES, CHIP 12 5% 1/10W
1-216-005-00	s	RES, CHIP 15 5% 1/10W
1-216-007-00	s	RES, CHIP 18 5% 1/10W
1-216-009-00	s	RES, CHIP 22 5% 1/10W
1-216-011-00	s	RES, CHIP 27 5% 1/10W
1-216-013-00	s	RES, CHIP 33 5% 1/10W
1-216-015-00	s	RES, CHIP 39 5% 1/10W
1-216-017-00	s	RES, CHIP 47 5% 1/10W
1-216-019-00	s	RES, CHIP 56 5% 1/10W
1-216-021-00	s	RES, CHIP 68 5% 1/10W
1-216-023-00	s	RES, CHIP 82 5% 1/10W
1-216-025-00	s	RES, CHIP 100 5% 1/10W
1-216-027-00	s	RES, CHIP 120 5% 1/10W
1-216-029-00	s	RES, CHIP 150 5% 1/10W
1-216-031-00	s	RES, CHIP 180 5% 1/10W
1-216-033-00	s	RES, CHIP 220 5% 1/10W
1-216-035-00	s	RES, CHIP 270 5% 1/10W
1-216-037-00	s	RES, CHIP 330 5% 1/10W
1-216-039-00	s	RES, CHIP 390 5% 1/10W
1-216-041-00	s	RES, CHIP 470 5% 1/10W
1-216-043-00	s	RES, CHIP 560 5% 1/10W
1-216-045-00	s	RES, CHIP 680 5% 1/10W
1-216-047-00	s	RES, CHIP 820 5% 1/10W
1-216-049-00	s	RES, CHIP 1k 5% 1/10W
1-216-051-00	s	RES, CHIP 1.2k 5% 1/10W
1-216-053-00	s	RES, CHIP 1.5k 5% 1/10W
1-216-055-00	s	RES, CHIP 1.8k 5% 1/10W
1-216-057-00	s	RES, CHIP 2.2k 5% 1/10W
1-216-059-00	s	RES, CHIP 2.7k 5% 1/10W
1-216-061-00	s	RES, CHIP 3.3k 5% 1/10W
1-216-063-00	s	RES, CHIP 3.9k 5% 1/10W
1-216-065-00	s	RES, CHIP 4.7k 5% 1/10W
1-216-067-00	s	RES, CHIP 5.6k 5% 1/10W
1-216-069-00	s	RES, CHIP 6.8k 5% 1/10W
1-216-071-00	s	RES, CHIP 8.2k 5% 1/10W

Part No.	SP	Description
1-216-073-00	s	RES, CHIP 10k 5% 1/10W
1-216-075-00	s	RES, CHIP 12k 5% 1/10W
1-216-077-00	s	RES, CHIP 15k 5% 1/10W
1-216-079-00	s	RES, CHIP 18k 5% 1/10W
1-216-081-00	s	RES, CHIP 22k 5% 1/10W
1-216-083-00	s	RES, CHIP 27k 5% 1/10W
1-216-085-00	s	RES, CHIP 33k 5% 1/10W
1-216-087-00	s	RES, CHIP 39k 5% 1/10W
1-216-089-00	s	RES, CHIP 47k 5% 1/10W
1-216-091-00	s	RES, CHIP 56k 5% 1/10W
1-216-093-00	s	RES, CHIP 68k 5% 1/10W
1-216-095-00	s	RES, CHIP 82k 5% 1/10W
1-216-097-00	s	RES, CHIP 100k 5% 1/10W
1-216-099-00	s	RES, CHIP 120k 5% 1/10W
1-216-101-00	s	RES, CHIP 150k 5% 1/10W
1-216-103-00	s	RES, CHIP 180k 5% 1/10W
1-216-105-00	s	RES, CHIP 220k 5% 1/10W
1-216-107-00	s	RES, CHIP 270k 5% 1/10W
1-216-109-00	s	RES, CHIP 330k 5% 1/10W
1-216-111-00	s	RES, CHIP 390k 5% 1/10W
1-216-113-00	s	RES, CHIP 470k 5% 1/10W
1-216-115-00	s	RES, CHIP 560k 5% 1/10W
1-216-117-00	s	RES, CHIP 680k 5% 1/10W
1-216-119-00	s	RES, CHIP 820k 5% 1/10W
1-216-121-00	s	RES, CHIP 1.0M 5% 1/10W
1-216-123-00	s	RES, CHIP 1.2M 5% 1/10W
1-216-125-00	s	RES, CHIP 1.5M 5% 1/10W
1-216-127-00	s	RES, CHIP 1.8M 5% 1/10W
1-216-129-00	s	RES, CHIP 2.2M 5% 1/10W
1-216-131-00	s	RES, CHIP 2.7M 5% 1/10W
1-216-133-00	s	RES, CHIP 3.3M 5% 1/10W

RESISTOR, CHIP METAL

Part No.	SP	Description
1-216-603-11	s	RES, CHIP METAL 10 1% 1/10W
1-216-605-11	s	RES, CHIP METAL 12 1% 1/10W
1-216-609-11	s	RES, CHIP METAL 18 1% 1/10W
1-216-611-11	s	RES, CHIP METAL 22 1% 1/10W
1-216-614-11	s	RES, CHIP METAL 30 1% 1/10W
1-216-617-11	s	RES, CHIP METAL 39 1% 1/10W
1-216-619-11	s	RES, CHIP METAL 47 1% 1/10W
1-216-620-11	s	RES, CHIP METAL 51 1% 1/10W
1-216-623-11	s	RES, CHIP METAL 68 1% 1/10W
1-216-624-11	s	RES, CHIP METAL 75 1% 1/10W
1-216-625-11	s	RES, CHIP METAL 82 1% 1/10W
1-216-626-11	s	RES, CHIP METAL 91 1% 1/10W
1-216-627-11	s	RES, CHIP METAL 100 1% 1/10W
1-216-629-11	s	RES, CHIP METAL 120 1% 1/10W
1-216-631-11	s	RES, CHIP METAL 150 1% 1/10W
1-216-633-11	s	RES, CHIP METAL 180 1% 1/10W
1-216-634-11	s	RES, CHIP METAL 200 1% 1/10W
1-216-635-11	s	RES, CHIP METAL 220 1% 1/10W
1-216-636-11	s	RES, CHIP METAL 240 1% 1/10W
1-216-637-11	s	RES, CHIP METAL 270 1% 1/10W
1-216-638-11	s	RES, CHIP METAL 300 1% 1/10W
1-216-639-11	s	RES, CHIP METAL 330 1% 1/10W
1-216-640-11	s	RES, CHIP METAL 360 1% 1/10W
1-216-641-11	s	RES, CHIP METAL 390 1% 1/10W
1-216-642-11	s	RES, CHIP METAL 430 1% 1/10W
1-216-643-11	s	RES, CHIP METAL 470 1% 1/10W
1-216-644-11	s	RES, CHIP METAL 510 1% 1/10W
1-216-645-11	s	RES, CHIP METAL 560 1% 1/10W
1-216-647-11	s	RES, CHIP METAL 680 1% 1/10W
1-216-648-11	s	RES, CHIP METAL 750 1% 1/10W
1-216-649-11	s	RES, CHIP METAL 820 1% 1/10W
1-216-650-11	s	RES, CHIP METAL 910 1% 1/10W
1-216-651-11	s	RES, CHIP METAL 1.0k 1% 1/10W
1-216-652-11	s	RES, CHIP METAL 1.1k 1% 1/10W
1-216-653-11	s	RES, CHIP METAL 1.2k 1% 1/10W
1-216-655-11	s	RES, CHIP METAL 1.5k 1% 1/10W
1-216-656-11	s	RES, CHIP METAL 1.6k 1% 1/10W
1-216-657-11	s	RES, CHIP METAL 1.8k 1% 1/10W
1-216-658-11	s	RES, CHIP METAL 2k 1% 1/10W
1-216-659-11	s	RES, CHIP METAL 2.2k 1% 1/10W
1-216-660-11	s	RES, CHIP METAL 2.4k 1% 1/10W
1-216-661-11	s	RES, CHIP METAL 2.7k 1% 1/10W
1-216-662-11	s	RES, CHIP METAL 3k 1% 1/10W
1-216-663-11	s	RES, CHIP METAL 3.3k 1% 1/10W
1-216-664-11	s	RES, CHIP METAL 3.5k 1% 1/10W

Part No.	SP	Description
1-216-665-11	s	RES, CHIP METAL 3.9k 1% 1/10W
1-216-666-11	s	RES, CHIP METAL 4.3k 1% 1/10W
1-216-667-11	s	RES, CHIP METAL 4.7k 1% 1/10W
1-216-668-11	s	RES, CHIP METAL 5.1k 1% 1/10W
1-216-669-11	s	RES, CHIP METAL 5.6k 1% 1/10W
1-216-670-11	s	RES, CHIP METAL 6.2k 1% 1/10W
1-216-671-11	s	RES, CHIP METAL 6.8k 1% 1/10W
1-216-672-11	s	RES, CHIP METAL 7.5k 1% 1/10W
1-216-673-11	s	RES, CHIP METAL 8.2k 1% 1/10W
1-216-674-11	s	RES, CHIP METAL 9.1k 1% 1/10W
1-216-675-11	s	RES, CHIP METAL 10k 1% 1/10W
1-216-676-11	s	RES, CHIP METAL 11k 1% 1/10W
1-216-677-11	s	RES, CHIP METAL 12k 1% 1/10W
1-216-678-11	s	RES, CHIP METAL 13k 1% 1/10W
1-216-679-11	s	RES, CHIP METAL 15k 1% 1/10W
1-216-680-11	s	RES, CHIP METAL 16k 1% 1/10W
1-216-681-11	s	RES, CHIP METAL 18k 1% 1/10W
1-216-682-11	s	RES, CHIP METAL 20k 1% 1/10W
1-216-683-11	s	RES, CHIP METAL 22k 1% 1/10W
1-216-684-11	s	RES, CHIP METAL 24k 1% 1/10W
1-216-685-11	s	RES, CHIP METAL 27k 1% 1/10W
1-216-686-11	s	RES, CHIP METAL 30k 1% 1/10W
1-216-687-11	s	RES, CHIP METAL 33k 1% 1/10W
1-216-688-11	s	RES, CHIP METAL 36k 1% 1/10W
1-216-689-11	s	RES, CHIP METAL 39k 1% 1/10W
1-216-690-11	s	RES, CHIP METAL 43k 1% 1/10W
1-216-691-11	s	RES, CHIP METAL 49k 1% 1/10W
1-216-692-11	s	RES, CHIP METAL 51k 1% 1/10W
1-216-693-11	s	RES, CHIP METAL 56k 1% 1/10W
1-216-694-11	s	RES, CHIP METAL 62k 1% 1/10W
1-216-695-11	s	RES, CHIP METAL 68k 1% 1/10W
1-216-696-11	s	RES, CHIP METAL 75k 1% 1/10W
1-216-697-11	s	RES, CHIP METAL 82k 1% 1/10W
1-216-698-11	s	RES, CHIP METAL 91k 1% 1/10W
1-216-699-11	s	RES, CHIP METAL 100k 1% 1/10W

INDUCTOR, MICRO

Part No.	SP	Description		
1-408-876-00	s	INDUCTOR, MICRO	0.18	5%
1-408-877-00	s	INDUCTOR, MICRO	0.22	5%
1-408-878-00	s	INDUCTOR, MICRO	0.33	5%
1-408-879-21	s	INDUCTOR, MICRO	0.47	5%
1-408-931-00	s	INDUCTOR, MICRO	0.56	5%
1-408-880-00	s	INDUCTOR, MICRO	0.68	5%
1-408-763-00	s	INDUCTOR, MICRO	0.82	5%
1-408-397-00	s	INDUCTOR, MICRO	1.0	5%
1-408-398-00	s	INDUCTOR, MICRO	1.2	5%
1-408-399-00	s	INDUCTOR, MICRO	1.5	5%
1-408-400-00	s	INDUCTOR, MICRO	1.8	5%
1-408-401-00	s	INDUCTOR, MICRO	2.2	5%
1-408-402-00	s	INDUCTOR, MICRO	2.7	5%
1-408-403-00	s	INDUCTOR, MICRO	3.3	5%
1-408-404-00	s	INDUCTOR, MICRO	3.9	5%
1-408-405-00	s	INDUCTOR, MICRO	4.7	5%
1-408-406-00	s	INDUCTOR, MICRO	5.6	5%
1-408-407-00	s	INDUCTOR, MICRO	6.8	5%
1-408-408-00	s	INDUCTOR, MICRO	8.2	5%
1-408-409-00	s	INDUCTOR, MICRO	10	5%
1-408-410-00	s	INDUCTOR, MICRO	12	5%
1-408-411-00	s	INDUCTOR, MICRO	15	5%
1-408-412-00	s	INDUCTOR, MICRO	18	5%
1-408-413-00	s	INDUCTOR, MICRO	22	5%
1-408-414-00	s	INDUCTOR, MICRO	27	5%
1-408-415-00	s	INDUCTOR, MICRO	33	5%
1-408-416-00	s	INDUCTOR, MICRO	39	5%
1-408-417-21	s	INDUCTOR, MICRO	47	5%
1-408-418-00	s	INDUCTOR, MICRO	56	5%
1-408-419-00	s	INDUCTOR, MICRO	68	5%
1-408-420-00	s	INDUCTOR, MICRO	82	5%
1-408-421-00	s	INDUCTOR, MICRO	100	5%
1-408-422-00	s	INDUCTOR, MICRO	120	5%
1-408-423-00	s	INDUCTOR, MICRO	150	5%
1-408-424-00	s	INDUCTOR, MICRO	180	5%
1-408-425-00	s	INDUCTOR, MICRO	220	5%
1-408-426-00	s	INDUCTOR, MICRO	270	5%
1-408-427-00	s	INDUCTOR, MICRO	330	5%
1-408-428-00	s	INDUCTOR, MICRO	390	5%
1-408-429-00	s	INDUCTOR, MICRO	470	5%

Ref. No.	Part No.	SP	Description
AT-65 BOARD			
	A-7515-337-A	o	MOUNTED CIRCUIT BOARD
1pc	2-251-622-00	s	LEVER, PC BOARD
1pc	7-626-317-11	s	PIN, SPRING 2.5X8
2pcs	7-682-545-09	s	SCREW +B 3X4
BZ1	1-502-913-00	s	ALARM
C1	1-161-485-00	s	CERAMIC 0.1uF 50V
C2	1-161-485-00	s	CERAMIC 0.1uF 50V
C3	1-162-767-11	s	CERAMIC 0.0015uF 5% 50V
C4	1-163-227-11	s	CERAMIC 10PF 5% 50V
C5	1-162-765-11	s	CERAMIC 0.001uF 5% 50V
C7	1-164-232-11	s	CERAMIC, CHIP 0.01uF 25V
C11	1-126-157-11	s	ELECT 10uF 20% 16V
C14	1-124-234-00	s	ELECT 22uF 20% 16V
C15	1-163-033-00	s	CERAMIC, CHIP 0.022uF 50V
C17	1-163-135-00	s	CERAMIC, CHIP 560PF 5% 50V
C18	1-163-263-11	s	CERAMIC 330PF 5% 50V
C19	1-163-263-11	s	CERAMIC 330PF 5% 50V
C22	1-126-157-11	s	ELECT 10uF 20% 16V
C23	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
C26	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
C27	1-107-049-00	s	MICA 8.2PF 500V
C28	1-107-049-00	s	MICA 8.2PF 500V
C29	1-124-242-00	s	ELECT 33uF 20% 25V
C31	1-126-157-11	s	ELECT 10uF 20% 16V
C32	1-124-234-00	s	ELECT 22uF 20% 16V
C33	1-124-234-00	s	ELECT 22uF 20% 16V
C34	1-124-234-00	s	ELECT 22uF 20% 16V
C35	1-126-157-11	s	ELECT 10uF 20% 16V
C37	1-163-263-11	s	CERAMIC 330PF 5% 50V
C41	1-124-234-00	s	ELECT 22uF 20% 16V
C43	1-126-163-11	s	ELECT 4.7MF 20% 50V
C44	1-126-101-11	s	ELECT 100uF 20% 16V
C45	1-124-443-00	s	ELECT 100uF 20% 10V
C46	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
C48	1-126-153-11	s	ELECT 22uF 20% 6.3V
C51	1-131-347-00	s	TANTALUM 1uF 10% 35V
C52	1-124-229-00	s	ELECT 33uF 20% 10V
C53	1-126-101-11	s	ELECT 100uF 20% 16V
C54	1-126-178-11	s	ELECT 220uF 20% 10V
C55	1-124-443-00	s	ELECT 100uF 20% 10V
C56	1-124-229-00	s	ELECT 33uF 20% 10V
C88	1-164-232-11	s	CERAMIC, CHIP 0.01uF 10% 50V
CN1	1-580-747-00	o	CONNECTOR, 53P, MALE

Ref. No.	Part No.	SP	Description
CN17	1-526-662-21	s	SOCKET, IC (DP) 40P
CN119	1-526-662-21	s	SOCKET, IC (DP) 40P
CN128	1-526-662-21	s	SOCKET, IC (DP) 40P
D1	8-719-800-76	s	DIODE 1SS226
D2	8-719-800-76	s	DIODE 1SS226
D3	8-719-400-18	s	DIODE MA152WK
D4	8-719-800-76	s	DIODE 1SS226
D5	8-719-800-76	s	DIODE 1SS226
D6	8-719-800-76	s	DIODE 1SS226
D7	8-719-907-19	s	DIODE, VARICAP FC52M-5
D8	8-719-104-34	s	DIODE 1S2836
D9	8-719-800-76	s	DIODE 1SS226
D10	8-719-104-34	s	DIODE 1S2836
D11	8-719-101-47	s	DIODE RD4.7EL2
D12	8-719-101-47	s	DIODE RD4.7EL2
D13	8-719-981-00	s	DIODE ERC81-004
FB1	1-535-176-00	s	BEAD, FERRITE
FB2	1-535-176-00	s	BEAD, FERRITE
FB3	1-535-176-00	s	BEAD, FERRITE
IC1	8-759-906-53	s	IC TL082CPS
IC2	8-759-208-13	s	IC TC40I68FHB
IC3	8-759-200-77	s	IC TC4028BF
IC4	8-759-906-53	s	IC TL082CPS
IC5	8-759-201-53	s	IC TC40H000F
IC6	8-759-996-82	s	IC MSM82C55A-2GS
IC7	8-759-996-81	s	IC MSM80C154RS
IC8	8-759-204-69	s	IC TC40H373F
IC9	8-759-201-53	s	IC TC40H000F
IC10	8-759-197-00	s	IC UPD28C64ACZ-20
IC11	8-759-201-53	s	IC TC40H000F
IC12	8-759-198-85	s	IC 27C512-C35A65-V3.01
IC13	8-759-204-82	s	IC TC40H244F
IC14	8-759-204-83	s	IC TC40H245F
IC15	8-759-031-84	s	IC TC7S04F
IC16	8-752-337-78	s	IC CXK58257AM-10L
IC17	8-759-204-89	s	IC TC40H373F
IC18	8-759-204-71	s	IC TC40H163F
IC19	8-759-998-08	s	IC MSM80C49-884RS
IC20	8-759-204-66	s	IC TC40H157F
IC21	8-759-926-72	s	IC SN74HC386NS
IC22	8-759-008-74	s	IC MC14001BF
IC23	8-759-009-04	s	IC MC14050BF
IC24	8-759-906-53	s	IC TL082CPS
IC25	8-759-998-82	s	IC MSM82C55A-2GS
IC26	8-759-204-60	s	IC TC40H139F
IC27	8-759-973-71	s	IC TL7705CPS-B
IC28	8-759-998-62	s	IC MSM80C49-831RS
IC29	8-759-204-82	s	IC TC40H244F
IC30	8-759-008-83	s	IC MC14014BF

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref.No.	Part No.	SP	Description
IC31	8-759-102-82	s	IC UPD82C43G
IC32	8-759-204-72	s	IC TC40H164F
IC33	8-759-204-72	s	IC TC40H164F
IC34	8-759-201-61	s	IC TC40H004F
IC35	8-759-300-71	s	IC MC14053BF
IC36	8-759-008-83	s	IC MC14014BF
IC37	8-759-201-61	s	IC TC40H004F
IC38	8-759-906-53	s	IC TL062CPS
IC39	8-759-201-53	s	IC TC40H000F
IC40	8-759-201-53	s	IC TC40H000F
IC41	8-759-204-71	s	IC TC40H163F
IC42	8-759-204-71	s	IC TC40H163F
IC43	8-759-204-20	s	IC TC4024BF
IC44	8-759-201-53	s	IC TC40H000F
IC45	8-759-925-98	s	IC SN74HC86NS
IC46	8-759-939-25	s	IC SN751768P
IC47	8-759-908-95	s	IC TL145ICNS
IC48	8-759-906-53	s	IC TL062CPS
IC49	8-759-300-71	s	IC MC14053BF
L1	1-408-413-00	s	INDUCTOR 22uH
L2	1-408-413-00	s	INDUCTOR 22uH
L3	1-408-413-00	s	INDUCTOR 22uH
L4	1-408-413-00	s	INDUCTOR 22uH
L5	1-408-421-00	s	INDUCTOR 100uH
L6	1-408-421-00	s	INDUCTOR 100uH
L7	1-410-948-11	s	INDUCTOR 100uH
L8	1-408-413-00	s	INDUCTOR 22uH
PH1	8-719-800-74	s	DIODE TLP651-VIDEO
PH2	8-719-800-74	s	DIODE TLP651-VIDEO
Q1	8-729-100-66	s	TRANSISTOR 2SC1623
Q2	8-729-109-67	s	TRANSISTOR 2SA812-M6
Q3	8-729-100-66	s	TRANSISTOR 2SC1623
Q4	8-729-109-67	s	TRANSISTOR 2SA612-M6
Q5	8-729-100-66	s	TRANSISTOR 2SC1623
Q6	8-729-109-44	s	TRANSISTOR 2SK94
Q7	8-729-109-44	s	TRANSISTOR 2SK94
Q8	8-729-100-66	s	TRANSISTOR 2SC1623
Q9	8-729-113-33	s	TRANSISTOR 2SB733-4
Q10	8-729-140-96	s	TRANSISTOR 2SD774-4
Q11	8-729-105-29	s	TRANSISTOR 2SA1385
Q12	8-729-908-45	s	TRANSISTOR DTA143XK
Q13	8-729-908-45	s	TRANSISTOR DTA143XK
Q14	8-729-920-34	s	TRANSISTOR DTC143XK

Ref.No.	Part No.	SP	Description
R10	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R102	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R103	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R104	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R105	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R106	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R120	1-216-682-11	s	METAL, CHIP 20K 0.5% 1/10W
R121	1-216-682-11	s	METAL, CHIP 20K 0.5% 1/10W
R124	1-216-687-11	s	METAL, CHIP 33K 0.5% 1/10W
R126	1-216-685-11	s	METAL, CHIP 27K 0.5% 1/10W
R127	1-216-673-11	s	METAL, CHIP 8.2K 0.5% 1/10W
R128	1-216-687-11	s	METAL, CHIP 33K 0.5% 1/10W
R129	1-216-677-11	s	METAL, CHIP 12K 0.5% 1/10W
R131	1-216-691-11	s	METAL, CHIP 47K 0.5% 1/10W
R132	1-216-691-11	s	METAL, CHIP 47K 0.5% 1/10W
R133	1-216-687-11	s	METAL, CHIP 33K 0.5% 1/10W
R146	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
R147	1-216-661-11	s	METAL, CHIP 2.7K 0.5% 1/10W
R148	1-216-675-11	s	METAL, CHIP 10K 0.5% 1/10W
RB1	1-232-509-00	s	COMPOSITION CIRCUIT BLOCK
RV1	1-228-458-00	s	RES, ADJ, METAL 5K
RV2	1-228-457-00	s	RES, ADJ, METAL 2K
RV3	1-228-474-00	s	RES, ADJ, METAL 10K
RV4	1-228-474-00	s	RES, ADJ, METAL 10K
S1	1-570-810-11	s	SWITCH, TOGGLE
S2	1-570-857-11	s	SWITCH, SLIDE
S3	1-553-252-00	s	SWITCH, DIGITAL
S4	1-553-252-00	s	SWITCH, DIGITAL
S5	1-570-857-11	s	SWITCH, SLIDE
S6	1-570-857-11	s	SWITCH, SLIDE
S7	1-570-857-11	s	SWITCH, SLIDE
S8	1-570-610-11	s	SWITCH, TOGGLE
S9	1-570-598-11	s	SWITCH, DIP 4-CKT
S10	1-572-682-11	s	SWITCH, DIGITAL ROTARY
X1	1-527-941-00	s	VIBRATOR, CRYSTAL 10.944MHz

Parts that are not listed in the "reference number order list" are shown in the "General Purpose Electrical Parts List".

Ref. No.	Parts No.	SP	Description				
AU-98 BOARD							
	A-7513-600-A	o	MOUNTED CIRCUIT BOARD "AU-98"				
C4	1-124-589-11	s	ELECT	47	20%	16V	
C11	1-124-247-11	s	ELECT	10	20%	35V	
C12	1-130-499-11	s	MYLAR	0.22	5%	50V	
C13	1-130-499-11	s	MYLAR	0.22	5%	50V	
C14	1-124-247-11	s	ELECT	10	20%	35V	
C15	1-124-910-11	s	ELECT	47	20%	35V	
C16	1-163-123-00	s	CERAMIC CHIP	180PF	5%	50V	
C17	1-124-247-11	s	ELECT	10	20%	35V	
C18	1-124-247-11	s	ELECT	10	20%	35V	
C19	1-124-247-11	s	ELECT	10	20%	35V	
C20	1-124-247-11	s	ELECT	10	20%	35V	
C21	1-163-139-00	s	CERAMIC CHIP	820PF	5%	50V	
C22	1-126-157-11	s	ELECT	10	20%	16V	
C23	1-124-257-00	s	ELECT	2.2	20%	35V	
C24	1-124-257-00	s	ELECT	2.2	20%	35V	
C25	1-124-257-00	s	ELECT	2.2	20%	35V	
C26	1-124-257-00	s	ELECT	2.2	20%	35V	
C27	1-130-495-11	s	MYLAR	0.1	5%	50V	
C28	1-130-495-11	s	MYLAR	0.1	5%	50V	
C29	1-126-157-11	s	ELECT	10	20%	16V	
C30	1-126-157-11	s	ELECT	10	20%	16V	
C31	1-124-257-00	s	ELECT	2.2	20%	35V	
C32	1-124-257-00	s	ELECT	2.2	20%	35V	
C33	1-124-257-00	s	ELECT	2.2	20%	35V	
C34	1-124-257-00	s	ELECT	2.2	20%	35V	
C35	1-126-157-11	s	ELECT	10	20%	16V	
C37	1-126-157-11	s	ELECT	10	20%	16V	
C43	1-124-589-11	s	ELECT	47	20%	16V	
C44	1-124-242-00	s	ELECT	33	20%	16V	
C47	1-124-589-11	s	ELECT	47	20%	16V	
C48	1-124-242-00	s	ELECT	33	20%	16V	
C57	1-124-482-11	s	ELECT	33	20%	35V	
C58	1-127-518-11	s	ELECT (SOLID)	100	20%	16V	
C61	1-163-139-00	s	CERAMIC CHIP	820PF	5%	50V	
C62	1-126-157-11	s	ELECT	10	20%	16V	
C66	1-124-248-11	s	ELECT	22	20%	35V	
C67	1-124-247-11	s	ELECT	10	20%	35V	
C68	1-124-910-11	s	ELECT	47	20%	35V	
C71	1-124-910-11	s	ELECT	47	20%	35V	
C72	1-130-495-11	s	MYLAR	0.1	5%	50V	
C77	1-124-910-11	s	ELECT	47	20%	35V	
C78	1-124-248-11	s	ELECT	22	20%	35V	

Ref. No.	Parts No.	SP	Description			
CN1	1-560-747-11	o	RECEPTACEL,	53P	MALE	
D1	8-719-820-58	s	1SS177			
D2	8-719-116-31	s	RD12EB2			
D3	8-719-102-51	s	1SZ51			
D10	8-719-820-58	s	1SS177			
D11	8-719-820-58	s	1SS177			
D12	8-719-820-58	s	1SS177			
D13	8-719-820-58	s	1SS177			
D14	8-719-820-58	s	1SS177			
D15	8-719-820-58	s	1SS177			
D16	8-719-820-58	s	1SS177			
D17	8-719-820-58	s	1SS177			
D18	8-719-101-23	s	1SS123			
D19	8-719-820-58	s	1SS177			
D20	8-719-100-05	s	1S2837			
D21	8-719-100-03	s	1S2835			
D22	8-719-820-58	s	1SS177			
D23	8-719-100-05	s	1S2837			
D24	8-719-100-03	s	1S2835			
D25	8-719-110-08	s	RD8.2E5-B2			
D26	8-719-100-05	s	1S2837			
D27	8-719-100-03	s	1S2835			
D28	8-719-100-03	s	1S2835			
D29	8-719-820-58	s	1SS177			
D30	8-719-820-58	s	1SS177			
D31	8-719-820-58	s	1SS177			
D32	8-719-101-23	s	1SS123			
D33	8-719-820-58	s	1SS177			
D34	8-719-101-23	s	1SS123			
D35	8-759-154-33	s	PS2604			
D36	8-759-154-33	s	PS2604			
D37	8-719-101-23	s	1SS123			
IC1	8-759-100-94	s	UPC358G2 : NEC			
IC2	8-759-981-92	s	RC4558M : RAYTHEON			
IC3	8-759-981-86	s	RC4558M-A : JRC			
IC4	8-759-981-92	s	RC4558M : RAYTHEON			
IC5	8-759-981-86	s	RC4558M-A : JRC			
IC6	8-759-981-92	s	RC4558M : RAYTHEON			
IC7	8-759-981-86	s	RC4558M-A : JRC			
IC8	8-759-981-92	s	RC4558M : RAYTHEON			
IC9	8-759-981-92	s	RC4558M : RAYTHEON			
IC10	8-759-981-92	s	RC4558M : RAYTHEON			
IC11	8-759-981-92	s	RC4558M : RAYTHEON			
IC12	8-759-981-86	s	RC4558M-A : RAYTHEON			
IC13	8-759-981-92	s	RC4558M : RAYTHEON			
IC14	8-759-009-07	s	MC14053BF : MOTOROLA			
IC15	8-759-706-05	s	RC78L05A : RAYTHEON			
IC16	8-759-708-05	s	RC79L05A : RAYTHEON			

Ref. No.	Parts No.	SP	Description
Q1	8-729-177-42	s	2SD774-3
Q2	8-729-100-76	s	2SA812
Q3	8-729-177-42	s	2SD774-3
Q4	8-729-218-43	s	2SK184-GR
Q5	8-729-177-42	s	2SD774-3
Q6	8-729-177-42	s	2SD774-3
Q7	8-729-100-66	s	2SC1623
Q8	8-729-100-76	s	2SA812
Q9	8-729-218-43	s	2SK184-GR
R145	1-247-861-00	s	CARBON 120K 5% 1/4W
R160	1-216-645-11	s	METAL CHIP 620 0.50% 1/10W
RV1	1-228-455-11	s	CERMET 1K
RV2	1-228-457-11	s	CERMET 2K
RV3	1-228-475-11	s	CERMET 20K
RV4	1-228-475-11	s	CERMET 20K
S1	1-570-857-11	s	SLIDE
S2	1-570-857-11	s	SLIDE
S3	1-570-838-11	s	SLIDE
S4	1-570-850-11	s	SLIDE
S5	1-570-469-11	s	SLIDE
S6	1-554-029-11	s	SLIDE
T2	1-426-038-00	s	600 : 600
T3	1-426-038-00	s	600 : 600
T4	1-426-038-00	s	600 : 600
T5	1-448-224-11	s	DC-DC CONVERTER

Ref. No.	Parts No.	SP	Description
CN-244 BOARD			
	1-624-114-11	o	PRINTED CIRCUIT BOARD "CN-244"
CN1	1-506-471-11	o	RECEPTACLE, 6P MALE
	1-562-151-11	o	PLUG HOUSING 6P
	1-563-088-11	o	PLUG CONTACT
CN2	1-506-469-11	o	RECEPTACLE, 4P MALE
	1-562-149-11	o	PLUG HOUSING 4P
	1-563-088-11	o	PLUG CONTACT
CN3	1-506-471-11	o	RECEPTACLE, 6P MALE
	1-562-151-11	o	PLUG HOUSING 6P
	1-563-088-11	o	PLUG CONTACT
CN4	1-506-471-11	o	RECEPTACLE, 6P MALE
	1-562-151-11	o	PLUG HOUSING 6P
	1-563-089-11	o	PLUG CONTACT
CN104	1-561-336-41	s	CONNECTOR, COAXIAL
CN105	1-561-336-41	s	CONNECTOR, COAXIAL
CN106	1-561-336-41	s	CONNECTOR, COAXIAL
CN107	1-561-336-41	s	CONNECTOR, COAXIAL
CN108	1-561-336-41	s	CONNECTOR, COAXIAL
CN109	1-561-336-41	s	CONNECTOR, COAXIAL
CN111	1-561-336-41	s	CONNECTOR, COAXIAL
CN112	1-561-336-41	s	CONNECTOR, COAXIAL
CN113	1-561-336-41	s	CONNECTOR, COAXIAL
CN114	1-561-336-41	s	CONNECTOR, COAXIAL
CN115	1-561-336-41	s	CONNECTOR, COAXIAL
CN116	1-561-336-41	s	CONNECTOR, COAXIAL
CN117	1-561-336-41	s	CONNECTOR, COAXIAL
CN118	1-561-336-41	s	CONNECTOR, COAXIAL

Ref.No.	Parts No.	SP	Description
CP-120 BOARD			
	A-7513-609-A	o	MOUNTED CIRCUIT BOARD "CP-120"
CN1	1-563-239-11	o	RECEPTACLE, 4OP FEMALE
CN2	1-506-467-11	o	RECEPTACLE, 2P MALE
	1-562-147-11	o	PLUG HOUSING 2P
	1-563-088-11	o	PLUG CONTACT
CN3	1-506-486-11	o	RECEPTACLE, 7P MALE
	1-562-152-11	o	PLUG HOUSING 7P
	1-563-088-11	o	PLUG CONTACT
D1	8-719-915-56	s	SLP459B
D2	8-719-915-56	s	SLP459B
D3	8-719-915-56	s	SLP459B
D4	8-719-915-56	s	SLP459B
D5	8-719-920-05	s	SLP281C-50
D6	8-719-920-55	s	SPR-54MVW
D7	8-719-100-03	s	1S2835
D8	8-719-100-03	s	1S2835
D9	8-719-100-03	s	1S2835
D10	8-719-918-99	s	LT-9220D
D11	8-719-920-05	s	SLP281C-50
D12	8-719-100-03	s	1S2835
D13	8-719-100-03	s	1S2835
D14	8-719-915-56	s	SLP459B
D15	8-719-915-56	s	SLP459B
D16	8-719-915-56	s	SLP459B
D17	8-719-915-56	s	SLP459B
D18	8-719-915-56	s	SLP459B
D19	8-719-915-56	s	SLP459B
D20	8-719-915-56	s	SLP459B
D21	8-719-915-56	s	SLP459B
D22	8-719-100-03	s	1S2835
D23	8-719-100-03	s	1S2835
D24	8-719-100-03	s	1S2835
D25	8-719-100-03	s	1S2835
D26	8-719-100-03	s	1S2835
D27	8-719-100-03	s	1S2835
D28	8-719-100-03	s	1S2835
IC1	8-759-102-82	s	UPDB2C43G: NEC
IC2	8-759-102-82	s	UPDB2C43G: NEC

Ref.No.	Parts No.	SP	Description
Q1	8-729-100-76	s	2SA812
Q2	8-729-100-76	s	2SA812
Q3	8-729-100-76	s	2SA812
Q4	8-729-100-76	s	2SA812
Q5	8-729-100-76	s	2SA812
Q6	8-729-100-76	s	2SA812
Q7	8-729-100-76	s	2SA812
Q8	8-729-100-76	s	2SA812
Q9	8-729-100-76	s	2SA812
Q10	8-729-100-76	s	2SA812
Q11	8-729-100-76	s	2SA812
RV1	1-224-981-21	s	CERMET 5K
RV2	1-224-981-21	s	CERMET 5K
RV3	1-224-981-21	s	CERMET 5K
RV4	1-224-981-21	s	CERMET 5K
RV5	1-224-981-21	s	CERMET 5K
RV6	1-224-981-21	s	CERMET 5K
RV7	1-224-981-21	s	CERMET 5K
S1	1-570-221-11	s	PUSH "PANEL ACTIVE"
S2	1-570-217-11	s	PUSH "MONITOR SELECT R"
S3	1-570-218-11	s	PUSH "MONITOR SELECT G"
S4	1-570-219-11	s	PUSH "MONITOR SELECT B"
S5	1-570-213-61	s	PUSH "MONITOR SELECT -G"
S6	1-570-213-41	s	PUSH "MONITOR SELECT ENC"

Ref. No.	Parts No.	SP	Description
DP-91 BOARD			
	1-627-559-11	o	PRINTED CIRCUIT BOARD "DL-91"
CN53	1-506-618-11	o	RECEPTACLE, 6P MALE
D1	8-719-920-05	s	SLP2810-50
D2	8-719-800-13	s	TLUR163
D3	8-719-800-13	s	TLUR163
D4	8-719-100-30	s	RD5.1ES-B2
S1	1-571-070-11	s	TOGGLE

Ref. No.	Parts No.	SP	Description
DM-67 BOARD			
	A-7513-858-A	o	MOUNTED CIRCUIT BOARD "DM-67"
C9	1-162-806-11	s	CERAMIC 0.1 10% 50V
C19	1-107-158-11	s	MICA 30PF 5% 500V
C35	1-163-130-00	s	CHIP CERAMIC 360PF 5% 50V
C52	1-162-877-11	s	CERAMIC 82PF 5% 50V
C55	1-162-732-11	s	CERAMIC 820PF 5% 50V
C57	1-162-718-11	s	CERAMIC 220PF 5% 50V
C59	1-162-718-11	s	CERAMIC 220PF 5% 50V
C89	1-162-872-11	s	CERAMIC 51PF 5% 50V
C83	1-161-473-00	s	CERAMIC 0.01 10% 50V
C84	1-162-806-11	s	CERAMIC 0.1 10% 50V
C97	1-162-722-11	s	CERAMIC 330PF 5% 50V
C98	1-162-806-11	s	CERAMIC 0.1 10% 50V
C99	1-161-473-00	s	CERAMIC 0.01 10% 50V
C101	1-161-473-00	s	CERAMIC 0.01 10% 50V
C111	1-163-127-00	s	CERAMIC 270PF 5% 50V
C112	1-163-127-00	s	CERAMIC 270PF 5% 50V
C505	1-162-877-11	s	CERAMIC 82PF 5% 50V
C506	1-107-205-11	s	MICA 13PF 5% 500V
C511	1-102-110-00	s	CERAMIC 220PF 10% 50V
C513	1-107-078-11	s	MICA 43PF 5% 50V
C514	1-162-876-11	s	CERAMIC 75PF 5% 50V
C538	1-162-765-11	s	CERAMIC 0.001 5% 50V
C539	1-162-765-11	s	CERAMIC 0.001 5% 50V
C553	1-161-473-00	s	CERAMIC 0.01 10% 50V
C580	1-161-473-00	s	CERAMIC 0.01 10% 50V
C583	1-161-473-00	s	CERAMIC 0.01 10% 50V
C602	1-107-075-11	s	MICA 39PF 5% 50V
C610	1-161-473-00	s	CERAMIC 0.01 10% 50V
C812	1-126-151-11	s	ELECT 4.7 20% 16V
C813	1-126-151-11	s	ELECT 4.7 20% 16V
C817	1-107-046-00	s	MICA 4.7PF ±0.5PF 500V
CN1	1-560-747-11	o	RECEPTACLE, 53P MALE
CP1	1-577-201-11	s	OSCILLATOR 16MHz
CP501	1-577-202-11	s	OSCILLATOR 36MHz
CV1	1-141-291-11	s	TRIMAR, CERAMIC 20P
D1	8-719-109-97	s	RD6.8ES-B2
D2	8-719-118-38	s	1SZ46A
D3	8-719-109-97	s	RD6.8ES-B2
D4	8-719-903-27	s	1SS168
D5	8-719-903-27	s	1SS168
D6	8-719-903-27	s	1SS168
D7	8-719-903-27	s	1SS168
D9	8-719-104-14	s	1SV34
D10	8-719-104-14	s	1SV34

Ref. No.	Parts No.	SP	Description
D501	8-719-903-27	s	1SS168
D502	8-719-903-27	s	1SS168
D503	8-719-903-27	s	1SS168
D504	8-719-903-27	s	1SS168
D505	8-719-104-14	s	1SV34
D506	8-719-104-14	s	1SV34
D507	8-719-104-14	s	1SV34
D508	8-719-104-14	s	1SV34
FL1	1-415-614-12	s	PHASE SHIFT (Y)
FL2	1-236-276-21	s	LOW PASS 6.5MHz
FL3	1-236-570-11	s	FILTER, BAND PASS
FL4	1-236-276-11	s	LOW PASS 6.5MHz
FL501	1-415-615-12	s	PHASE SHIFT (CD)
FL502	1-236-277-11	s	LOW PASS 4MHz
FL503	1-236-278-11	s	LOW PASS 38MHz
FL504	1-236-277-11	s	LOW PASS 4MHz
IC1	8-759-908-17	s	TL082CPS : TI
IC2	8-759-112-53	s	UPC1663G : NEC
IC3	8-759-927-99	s	MB3761PF : FUJITSU
IC4	8-759-030-16	s	TL082ACPS : TI
IC5	8-759-902-98	s	CX20183 : SONY
IC6	8-759-239-58	s	TC74HC221AF : TOSHIBA
IC7	8-759-962-21	s	RC78L05A : RAYTHEON
IC8	8-759-100-93	s	UPC393G2 : NEC
IC9	8-741-108-20	s	BX-1082 : SONY
IC10	8-759-981-51	s	RC1496M : RAYTHEON
IC11	8-759-030-16	s	TL082ACPS : TI
IC12	8-759-981-51	s	RC1496M : RAYTHEON
IC501	8-759-112-53	s	UPC1663G : NEC
IC502	8-759-908-54	s	TL064CNS : TI
IC503	8-759-100-93	s	UPC393G2 : NEC
IC504	8-759-908-54	s	TL064CNS : TI
IC505	8-741-108-20	s	BX-1082 : SONY
IC506	8-759-981-51	s	RC1496M : RAYTHEON
IC510	8-741-108-20	s	BX-1082 : SONY
IC512	8-759-981-51	s	RC1496M : RAYTHEON
L3	1-410-509-11	s	10
L4	1-410-509-11	s	10
L5	1-410-509-11	s	10
L6	1-410-509-11	s	10
L7	1-410-509-11	s	10

Ref. No.	Parts No.	SP	Description
L8	1-410-509-11	s	10
L9	1-410-509-11	s	10
L10	1-410-509-11	s	10
L11	1-410-509-11	s	10
L13	1-410-509-11	s	10
L18	1-410-509-11	s	10
L20	1-410-509-11	s	10
L21	1-410-509-11	s	10
L23	1-410-509-11	s	10
L26	1-412-149-11	s	MICRO 1.6
L27	1-410-303-11	s	MICRO 1
L502	1-410-509-11	s	10
L503	1-410-509-11	s	10
L504	1-410-509-11	s	10
L505	1-410-302-11	s	MICRO 0.1
L506	1-410-299-11	s	MICRO 0.5
L507	1-410-509-11	s	10
L508	1-410-509-11	s	10
L509	1-410-509-11	s	10
L510	1-410-296-11	s	MICRO 0.2
L511	1-410-302-11	s	MICRO 0.1
L512	1-410-509-11	s	10
L513	1-410-509-11	s	10
L514	1-410-509-11	s	10
L515	1-410-509-11	s	10
L516	1-410-509-11	s	10
L519	1-410-509-11	s	10
L524	1-410-509-11	s	10
L527	1-410-509-11	s	10
L528	1-410-509-11	s	10
L530	1-410-509-11	s	10
L533	1-410-301-11	s	MICRO 3
LV1	1-410-301-11	s	MICRO 1
Q1	8-729-113-32	s	2SB733
Q2	8-729-177-32	s	2SD773
Q3	8-729-100-66	s	2SC1623
Q4	8-729-100-66	s	2SC1623
Q5	8-729-175-72	s	2SC2757-T33
Q6	8-729-100-66	s	2SC1623
Q7	8-729-175-72	s	2SC2757-T33
Q8	8-729-175-72	s	2SC2757-T33
Q9	8-729-122-63	s	2SA1226
Q10	8-729-122-63	s	2SA1226

Ref. No.	Parts No.	SP	Description
Q11	8-729-175-72	s	2SC2757-T33
Q12	8-729-122-63	s	2SA1226
Q13	8-729-122-63	s	2SA1226
Q14	8-729-122-63	s	2SA1226
Q15	8-729-175-72	s	2SC2757-T33
Q16	8-729-112-65	s	2SA1462
Q17	8-729-175-72	s	2SC2757-T33
Q18	8-729-175-72	s	2SC2757-T33
Q19	8-729-122-63	s	2SA1226
Q20	8-729-200-87	s	2SC2714Y
Q21	8-729-122-63	s	2SA1226
Q22	8-729-122-63	s	2SA1226
Q23	8-729-100-68	s	2SC1623
Q24	8-729-122-63	s	2SA1226
Q25	X-491-190-11	s	2SK523
Q26	8-729-100-68	s	2SC1623
Q27	8-729-122-63	s	2SA1226
Q28	8-729-200-87	s	2SC2714Y
Q29	8-729-122-63	s	2SA1226
Q30	8-729-122-63	s	2SA1226
Q31	8-729-100-66	s	2SC1623
Q32	X-491-190-11	s	2SK523
Q33	X-491-190-11	s	2SK523
Q34	8-729-122-63	s	2SA1226
Q35	8-729-200-87	s	2SC2714Y
Q502	8-729-100-66	s	2SC1623
Q503	8-729-100-66	s	2SC1623
Q504	8-769-401-67	s	3SK163-1
Q505	8-729-175-72	s	2SC2757-T33
Q506	8-729-122-63	s	2SA1226
Q507	8-729-175-72	s	2SC2757-T33
Q508	8-729-175-72	s	2SC2757-T33
Q509	X-491-190-11	s	2SK523
Q510	X-491-190-11	s	2SK523
Q511	8-729-122-63	s	2SA1226
Q512	8-729-175-72	s	2SC2757-T33
Q513	8-729-175-72	s	2SC2757-T33
Q514	X-491-190-11	s	2SK523
Q515	8-729-100-68	s	2SC1623
Q516	8-729-122-63	s	2SA1226
Q517	8-729-122-63	s	2SA1226
Q518	8-729-200-87	s	2SC2714Y
Q519	8-729-122-63	s	2SA1226
Q520	8-729-100-66	s	2SC1623
Q521	8-729-175-72	s	2SC2757-T33
Q522	8-729-175-72	s	2SC2757-T33
Q523	X-491-190-11	s	2SK523
Q524	X-491-190-11	s	2SK523
Q525	8-729-100-68	s	2SC1623
Q526	8-729-122-63	s	2SA1226

Ref. No.	Parts No.	SP	Description
Q527	8-729-122-63	s	2SA1226
Q528	8-729-200-87	s	2SC2714Y
Q529	8-729-122-63	s	2SA1226
Q530	8-729-100-66	s	2SC1623
Q531	8-769-401-67	s	3SK163-1
Q532	8-729-112-65	s	2SA1462
Q533	8-729-175-72	s	2SC2757-T33
Q534	X-491-190-11	s	2SK523
Q535	8-729-122-63	s	2SA1226
RV1	1-228-457-11	s	CERMET 2K
RV2	1-228-458-11	s	CERMET 5K
RV3	1-228-457-11	s	CERMET 2K
RV4	1-228-457-11	s	CERMET 2K
RV5	1-228-457-11	s	CERMET 2K
RV6	1-228-457-11	s	CERMET 2K
RV7	1-228-455-00	s	CERMET 500
RV8	1-228-454-11	s	CERMET 200
RV9	1-228-472-11	s	CERMET 2K
RV10	1-228-457-11	s	CERMET 2K
RV11	1-228-460-11	s	CERMET 20K
RV12	1-228-456-11	s	CERMET 1K
RV13	1-228-455-00	s	CERMET 500
RV501	1-228-457-11	s	CERMET 2K
RV502	1-228-460-11	s	CERMET 20K
RV503	1-228-457-11	s	CERMET 2K
RV504	1-228-470-11	s	CERMET 500
RV505	1-228-457-11	s	CERMET 2K
RV506	1-228-454-11	s	CERMET 200
RV507	1-228-460-11	s	CERMET 20K
RV508	1-228-470-11	s	CERMET 500
RV509	1-228-457-11	s	CERMET 2K

EN-64/64P BOARD

Ref. No.	Parts No.	SP	Description
	A-7515-002-A	o	MOUNTED CIRCUIT BOARD "EN-64J" (J)
	A-7513-602-A	o	MOUNTED CIRCUIT BOARD "EN-64" (UC)
	A-7513-603-A	o	MOUNTED CIRCUIT BOARD "EN-64P" (EK)
C18	1-102-960-00	s	CERAMIC 24PF 5% 50V (J, UC)
C18	1-162-871-11	s	CERAMIC 47PF 5% 50V (EK)
C19	1-102-960-00	s	CERAMIC 24PF 5% 50V (J, UC)
C19	1-162-718-11	s	CERAMIC 180PF 5% 50V (EK)
C20	1-162-710-11	s	CERAMIC 100PF 5% 50V
C25	1-162-673-11	s	CERAMIC 33PF 5% 50V (J, UC)
C26	1-162-728-11	s	CERAMIC 560PF 5% 50V (J, UC)
C26	1-162-871-11	s	CERAMIC 47PF 5% 50V (EK)
C27	1-162-716-11	s	CERAMIC 180PF 5% 50V
C32	1-162-873-11	s	CERAMIC 56PF 5% 50V (J, UC)
C32	1-161-458-00	s	CERAMIC 82PF 5% 50V (EK)
C33	1-162-714-11	s	CERAMIC 150PF 5% 50V (J, UC)
C33	1-162-875-11	s	CERAMIC 68PF 5% 50V (EK)
C57	1-102-961-00	s	CERAMIC 15PF 5% 50V
C58	1-107-039-00	s	MICA 1.2PF ± 0.5PF 500V (J, UC)
C58	1-107-040-00	s	MICA 1.5PF ± 0.5PF 500V (EK)
C67	1-102-934-00	s	CERAMIC 1PF ± 0.25PF 50V
C68	1-102-934-00	s	CERAMIC 1PF ± 0.25PF 50V
C84	1-162-674-11	s	CERAMIC 39PF 5% 50V (J, UC)
C84	1-162-716-11	s	CERAMIC 180PF 5% 50V (EK)
C85	1-162-720-11	s	CERAMIC 270PF 5% 50V (J, UC)
C85	1-162-673-11	s	CERAMIC 33PF 5% 50V (EK)
C93	1-102-942-00	s	CERAMIC 5PF ± 0.5PF 50V
C96	1-102-934-00	s	CERAMIC 1PF ± 0.25PF 50V
C99	1-161-485-00	s	CERAMIC 0.1 50V
C100	1-161-485-00	s	CERAMIC 0.1 50V
C102	1-102-934-00	s	CERAMIC 1PF ± 0.25PF 50V
C105	1-161-485-00	s	CERAMIC 0.1 50V
C106	1-161-485-00	s	CERAMIC 0.1 50V
C108	1-102-942-00	s	CERAMIC 5PF ± 0.5PF 50V
C111	1-102-934-00	s	CERAMIC 1PF ± 0.25PF 50V
C114	1-161-485-00	s	CERAMIC 0.1 50V
C115	1-161-485-00	s	CERAMIC 0.1 50V
C206	1-102-934-00	s	CERAMIC 1PF ± 0.25PF 50V
C207	1-102-934-00	s	CERAMIC 1PF ± 0.25PF 50V
C210	1-161-485-00	s	CERAMIC 0.1 50V
C211	1-161-485-00	s	CERAMIC 0.1 50V
C212	1-162-720-11	s	CERAMIC 270PF 5% 50V (J, UC)
C212	1-162-673-11	s	CERAMIC 33PF 5% 50V (EK)
C213	1-162-674-11	s	CERAMIC 39PF 5% 50V (J, UC)
C213	1-162-716-11	s	CERAMIC 180PF 5% 50V (EK)
C218	1-124-119-11	s	ELECT 330 20% 16V
C226	1-102-935-00	s	CERAMIC 2PF ± 0.25PF 50V
C227	1-102-934-00	s	CERAMIC 1PF ± 0.25PF 50V
C230	1-161-485-00	s	CERAMIC 0.1 50V
C231	1-161-485-00	s	CERAMIC 0.1 50V
C236	1-162-667-11	s	CERAMIC 10PF 5% 50V
C240	1-102-945-00	s	CERAMIC 8PF ± 0.5PF 50V
C241	1-102-943-00	s	CERAMIC 6PF ± 0.5PF 50V
C242	1-163-038-00	s	CERAMIC 5PF ± 0.25PF 50V (N)
C244	1-161-485-00	s	CERAMIC 0.1 50V
C245	1-161-485-00	s	CERAMIC 0.1 50V
CN1	1-560-747-11	o	RECEPTACLE, 53P MALE
D1	8-719-109-97	s	RD6.8ES-B2
D2	8-719-109-97	s	RD6.8ES-B2
D3	8-719-102-51	s	1SZ51
D4	8-719-109-97	s	RD6.8ES-B2
D5	8-719-100-03	s	1S2835
D6	8-719-100-03	s	1S2835
D7	8-719-100-03	s	1S2835
D8	8-719-100-05	s	1S2837
D9	8-719-100-05	s	1S2837
D10	8-719-100-03	s	1S2835
D11	8-719-100-03	s	1S2835
D12	8-719-100-05	s	1S2837
D13	8-719-100-05	s	1S2837
D14	8-719-100-05	s	1S2837
D15	8-719-100-03	s	1S2835
D16	8-719-100-03	s	1S2835
D17	8-719-100-03	s	1S2835
D19	8-719-100-03	s	1S2835
DL1	1-415-290-21	s	(J, UC)
DL3	1-415-291-00	s	(J, UC)
DL3	1-415-304-00	s	(EK)
FL1	1-235-161-00	s	BAND PASS (J, UC)
FL1	1-235-181-00	s	BAND PASS (EK)

Ref. No.	Parts No.	SP	Description
IC1	8-759-908-54	s	TL064CNS : TI
IC2	8-759-905-59	s	CX22017 : SONY
IC4	8-759-911-77	s	CX-796BA : SONY
IC5	8-759-908-74	s	MC14001BF : MOTOROLA
IC6	8-759-908-79	s	MC14011BF : MOTOROLA
IC7	8-759-250-20	s	TC5020BP : TOSHIBA
IC8	8-759-908-82	s	MC14013BF : MOTOROLA
IC9	8-759-765-28	s	27C64-25-C35ENC1.00
IC10	8-759-204-90	s	TC40H374F : TOSHIBA
IC11	8-759-981-68	s	RC4558MA : JRC
IC12	8-759-980-16	s	TL082ACPS : TI
L3	1-408-849-11	s	330 (J, UC)
L3	1-410-758-11	s	150 (EK)
L4	1-408-851-11	s	560 (J, UC)
L4	1-410-756-11	s	150 (EK)
L21	1-408-145-11	s	COIL 19 (J, UC)
LV1	1-408-844-00	s	22
LV2	1-408-844-00	s	22 (J, UC)
LV2	1-408-845-00	s	100 (EK)
LV3	1-408-844-00	s	22 (J, UC)
LV3	1-408-845-00	s	100 (EK)
Q1	8-729-113-33	s	2SB733-4
Q2	8-729-177-32	s	2SD773
Q3	8-729-113-33	s	2SB733-4
Q4	8-729-100-66	s	2SC1623
Q5	8-729-100-66	s	2SC1623
Q6	8-729-100-66	s	2SC1623
Q7	8-729-100-66	s	2SC1623
Q8	8-729-100-66	s	2SC1623
Q9	8-729-100-66	s	2SC1623
Q10	8-729-100-66	s	2SC1623
Q11	8-729-100-66	s	2SC1623
Q12	8-729-100-66	s	2SC1623
Q13	8-729-100-66	s	2SC1623
Q14	8-729-100-78	s	2SA812
Q15	8-729-100-66	s	2SC1623
Q16	8-729-200-86	s	2SC2714O
Q17	8-729-122-63	s	2SA1226
Q18	8-729-101-25	s	2SC1009A
Q19	8-729-101-25	s	2SC1009A
Q20	8-729-100-66	s	2SC1623
Q21	8-729-101-25	s	2SC1009A
Q22	8-729-216-22	s	2SA1122C
Q23	8-729-216-22	s	2SA1122C
Q24	8-729-216-22	s	2SA1122C
Q25	8-729-216-22	s	2SA1122C
Q26	8-729-216-22	s	2SA1122C
Q27	8-729-216-22	s	2SA1122C
Q28	8-729-100-66	s	2SC1623
Q29	8-729-100-66	s	2SC1623
Q30	8-729-100-66	s	2SC1623
Q31	8-729-100-66	s	2SC1623
Q32	8-729-100-66	s	2SC1623
Q33	8-729-100-66	s	2SC1623
Q34	8-729-200-86	s	2SC2714O
Q35	8-729-200-86	s	2SC2714O
Q36	8-729-200-86	s	2SC2714O
Q37	8-729-312-22	s	2SA1122C
Q38	8-729-200-86	s	2SC2714O
Q39	8-729-216-22	s	2SA1122C
Q40	8-729-100-66	s	2SC1623
Q41	8-729-200-86	s	2SC2714O
Q42	8-729-216-22	s	2SA1122C
Q43	8-729-216-22	s	2SA1122C
Q44	8-729-200-86	s	2SC2714O
Q45	8-729-216-22	s	2SA1122C
Q46	8-729-200-86	s	2SC2714O
Q47	8-729-122-63	s	2SA1226
Q48	8-729-200-86	s	2SC2714O
Q49	8-729-122-63	s	2SA1226
Q50	8-729-200-86	s	2SC2714O
Q51	8-729-216-22	s	2SA1122C
Q52	8-729-200-86	s	2SC2714O
Q53	8-729-122-63	s	2SA1226
Q54	8-729-200-86	s	2SC2714O
Q55	8-729-122-63	s	2SA1226
Q56	8-729-216-22	s	2SA1122C
Q57	8-729-100-66	s	2SC1623
Q58	8-729-216-22	s	2SA1122C
Q59	8-729-216-22	s	2SA1122C
Q60	8-729-216-22	s	2SA1122C
Q61	8-729-200-86	s	2SC2714O
Q62	8-729-200-86	s	2SC2714O
Q63	8-729-200-86	s	2SC2714O
Q64	8-729-216-22	s	2SA1122C
Q65	8-729-216-22	s	2SA1122C

Ref. No.	Parts No.	SP	Description
Q66	8-729-200-86	s	2SC2714O
Q67	8-729-122-63	s	2SA1226
Q68	8-729-200-86	s	2SC2714O
Q69	8-729-122-63	s	2SA1226
Q70	8-729-122-63	s	2SA1226
Q71	8-729-200-86	s	2SC2714O
Q72	8-729-122-63	s	2SA1226
Q73	8-729-216-22	s	2SA1122C
Q74	8-729-200-86	s	2SC2714O
Q75	8-729-122-63	s	2SA1226
Q76	8-729-200-86	s	2SC2714O
Q77	8-729-216-22	s	2SA1122C
Q78	8-729-122-63	s	2SA1226
Q79	8-729-200-86	s	2SC2714O
Q80	8-729-122-63	s	2SA1226
Q81	8-729-200-86	s	2SC2714O
Q82	8-729-200-86	s	2SC2714O
Q83	8-729-200-86	s	2SC2714O
Q84	8-729-216-22	s	2SA1122C
Q85	8-729-216-22	s	2SA1122C
Q86	8-729-200-86	s	2SC2714O
Q87	8-729-122-63	s	2SA1226
Q88	8-729-200-86	s	2SC2714O
Q89	8-729-122-63	s	2SA1226
Q90	8-729-122-63	s	2SA1226
Q91	8-729-200-86	s	2SC2714O
Q92	8-729-122-63	s	2SA1226
Q93	8-729-100-66	s	2SC1623
Q94	8-729-100-66	s	2SC1623
Q95	8-729-100-66	s	2SC1623
Q96	8-729-100-66	s	2SC1623
Q97	8-729-100-66	s	2SC1623
Q98	8-729-216-22	s	2SA1122C
Q99	8-729-216-22	s	2SA1122C
Q100	8-729-216-22	s	2SA1122C
Q101	8-729-216-22	s	2SA1122C
Q102	8-729-216-22	s	2SA1122C
Q103	8-729-216-22	s	2SA1122C
Q104	8-769-401-67	s	3SK163-1
Q105	8-729-100-66	s	2SC1623
Q106	8-769-401-67	s	3SK163-1
Q107	8-729-200-86	s	2SC2714O
Q108	8-729-200-86	s	2SC2714O
Q109	8-729-200-86	s	2SC2714O
Q110	8-769-401-67	s	3SK163-1
Q111	8-729-216-22	s	2SA1122C
Q112	8-729-216-22	s	2SA1122C
Q113	8-729-216-22	s	2SA1122C
Q114	8-729-216-22	s	2SA1122C
Q115	8-729-200-86	s	2SC2714O

Ref. No.	Parts No.	SP	Description
Q116	8-729-200-86	s	2SC2714O
Q117	8-729-216-22	s	2SA1122C
Q118	8-729-200-86	s	2SC2714O
Q119	8-729-122-63	s	2SA1226
Q120	8-729-216-22	s	2SA1122C
Q121	8-729-200-86	s	2SC2714O
Q122	8-729-122-63	s	2SA1226
Q123	8-729-100-76	s	2SA812
Q124	8-729-100-66	s	2SC1623
Q125	8-729-216-22	s	2SA1122C
Q126	8-729-216-22	s	2SA1122C
Q127	8-729-100-66	s	2SC1623
Q128	8-729-100-66	s	2SC1623
Q129	8-729-100-76	s	2SA812
Q130	8-729-100-76	s	2SA812
Q131	8-729-216-22	s	2SA1122C
Q132	8-729-216-22	s	2SA1122C
Q133	8-729-216-22	s	2SA1122C
Q134	8-729-216-22	s	2SA1122C
Q135	8-729-216-22	s	2SA1122C
Q136	8-729-216-22	s	2SA1122C
Q137	8-729-216-22	s	2SA1122C
Q138	8-729-216-22	s	2SA1122C
Q139	8-729-200-86	s	2SC2714O
Q140	8-729-200-86	s	2SC2714O
Q141	8-729-200-86	s	2SC2714O
Q142	8-729-200-86	s	2SC2714O
Q143	8-729-216-22	s	2SA1122C
Q144	8-729-200-86	s	2SC2714O
Q145	8-729-122-63	s	2SA1226
Q146	8-729-216-22	s	2SA1122C
Q147	8-729-200-86	s	2SC2714O
Q148	8-729-122-63	s	2SA1226
Q149	8-729-100-76	s	2SA812
Q150	8-729-100-66	s	2SC1623
Q151	8-769-401-67	s	3SK163-1
Q152	8-769-401-67	s	3SK163-1
R30	1-216-654-11	s	METAL 1.3K 0.5% 1/10W
R102	1-214-581-11	s	METAL 10K 1% 1/8W (J, UC)
R120	1-216-654-11	s	METAL 1.3K 0.5% 1/10W
R135	1-216-654-11	s	METAL 1.3K 0.5% 1/10W
R195	1-214-586-11	s	METAL 2.4K 1% 1/8W (UC)
R195	1-214-567-11	s	METAL 2.7K 1% 1/8W (J)
R195	1-214-561-00	s	METAL 1.5K 1% 1/8W (EK)
R216	1-214-585-11	s	METAL 15K 1% 1/8W
R240	1-214-586-11	s	METAL 2.4K 1% 1/8W (UC)
R240	1-214-567-11	s	METAL 2.7K 1% 1/8W (J)
R240	1-214-561-00	s	METAL 1.5K 1% 1/8W (EK)

Ref. No.	Parts No.	SP	Description
RB1	1-239-024-11	s	MATRIX
RB2	1-239-025-11	s	MATRIX
RB3	1-239-026-11	s	MATRIX
RB4	1-235-527-11	s	NETWORK (EK)
RB5	1-239-028-11	s	MATRIX (J, UC)
RB6	1-239-027-11	s	MATRIX
RV1	1-228-456-00	s	CERMET 1K
RV2	1-228-455-00	s	CERMET 500
RV3	1-228-458-00	s	CERMET 5K
RV4	1-228-455-00	s	CERMET 500
RV5	1-230-749-21	s	CERMET 5K
RV6	1-230-749-21	s	CERMET 5K
RV7	1-228-469-11	s	CERMET 200
RV8	1-228-468-11	s	CERMET 100
RV9	1-228-454-00	s	CERMET 200
RV10	1-228-454-00	s	CERMET 200
RV11	1-228-471-00	s	CERMET 1K
RV12	1-228-455-00	s	CERMET 500 (J, UC)
RV12	1-228-454-00	s	CERMET 200 (EK)
RV13	1-228-455-00	s	CERMET 500 (J, UC)
RV13	1-228-454-00	s	CERMET 200 (EK)
RV14	1-228-455-00	s	CERMET 500 (J, UC)
RV14	1-228-454-00	s	CERMET 200 (EK)
RV15	1-228-456-00	s	CERMET 1K
RV16	1-228-456-00	s	CERMET 1K
RV17	1-228-456-00	s	CERMET 1K
RV18	1-228-455-00	s	CERMET 500
RV19	1-228-456-00	s	CERMET 1K
RV20	1-228-456-00	s	CERMET 1K
RV21	1-228-457-00	s	CERMET 2K
RV22	1-228-458-00	s	CERMET 5K
RV23	1-228-454-00	s	CERMET 200
RV24	1-228-458-00	s	CERMET 5K
RV25	1-228-459-00	s	CERMET 10K
RV26	1-228-459-00	s	CERMET 10K
RV27	1-228-460-00	s	CERMET 20K
RV28	1-228-461-00	s	CERMET 50K
RV29	1-228-454-00	s	CERMET 200
RV30	1-228-458-00	s	CERMET 5K
RV31	1-237-037-11	s	CERMET 20K
RV32	1-237-037-11	s	CERMET 20K

Ref. No.	Parts No.	SP	Description
S1	1-570-857-11	s	SLIDE
S2	1-570-857-11	s	SLIDE
S3	1-570-850-11	s	SLIDE
S4	1-570-857-11	s	SLIDE
S5	1-570-857-11	s	SLIDE
S6	1-570-857-11	s	SLIDE
S7	1-564-948-21	o	PIN, CONNECTOR 3P
S8	1-564-948-21	o	PIN, CONNECTOR 3P
S9	1-564-948-21	o	PIN, CONNECTOR 3P

FL-62 BOARD

	1-627-568-11	o	PRINTED CIRCUIT BOARD "FL-62"
C1	1-106-367-00	s	MYLAR 0.01 5% 200V
C2	1-106-367-00	s	MYLAR 0.01 5% 200V
C3	1-106-367-00	s	MYLAR 0.01 5% 200V
C4	1-130-495-00	s	MYLAR 0.1 5% 50V
C5	1-130-495-00	s	MYLAR 0.1 5% 50V
C6	1-106-367-00	s	MYLAR 0.01 5% 200V
CN51	1-564-214-11	o	RECEPTACLE, 3P MALE
CN52	1-506-467-11	o	RECEPTACLE, 3P MALE
	1-562-147-11	o	PLUG HOUSING 2P
	1-563-088-11	o	PLUG CONTACT
L1	1-459-442-11	s	COIL (WITH CORE)
L2	1-459-442-11	s	COIL (WITH CORE)
L3	1-459-442-11	s	COIL (WITH CORE)
L4	1-459-442-11	s	COIL (WITH CORE)
L5	1-459-442-11	s	COIL (WITH CORE)

Ref. No.	Parts No.	SP	Description
IF-177 BOARD			
	A-7513-608-A	o	MOUNTED CIRCUIT BOARD "IF-177"
C1	1-127-512-00	s	ELECT (SOLID) 10 20% 25V
C3	1-127-487-00	s	ELECT (SOLID) 4.7 20% 10V
C7	1-127-491-00	s	ELECT (SOLID) 22 20% 6.3V
C8	1-161-863-11	s	CERAMIC 0.0015 50V
C10	1-127-518-11	s	ELECT (SOLID) 100 20% 16V
C12	1-127-491-00	s	ELECT (SOLID) 22 20% 10V
C13	1-127-491-00	s	ELECT (SOLID) 22 20% 10V
C20	1-127-499-00	s	ELECT (SOLID) 22 20% 16V
C21	1-102-114-00	s	CERAMIC 470PF 10% 50V
CN1	1-506-620-11	o	RECEPTACLE, 10P FEMALE
CN2	1-506-493-11	o	RECEPTACLE, 14P FEMALE
	1-562-185-00	o	PLUG HOUSING 14P
	1-563-088-11	o	PLUG CONTACT
CN3	1-506-731-21	o	RECEPTACEL, 40P MALE
D1	8-719-981-00	s	ERB81-004
D2	8-719-100-03	s	1S2835
D3	8-719-100-03	s	1S2835
D4	8-719-100-03	s	1S2835
D5	8-719-100-03	s	1S2835
D6	8-719-100-03	s	1S2835
D7	8-719-100-03	s	1S2835
D8	8-719-100-03	s	1S2835
D9	8-719-100-03	s	1S2835
D10	8-719-100-03	s	1S2835
D11	8-719-100-03	s	1S2835
D12	8-719-100-03	s	1S2835
D13	8-719-100-03	s	1S2835
D14	8-719-100-03	s	1S2835
D15	8-719-100-03	s	1S2835
D16	8-719-100-03	s	1S2835
D17	8-719-100-03	s	1S2835
FB1	1-535-178-00	s	RES, FERRITE
FB2	1-535-178-00	s	RES, FERRITE
FB3	1-535-178-00	s	RES, FERRITE

Ref. No.	Parts No.	SP	Description
IC1	8-759-908-95	s	TL1451CNS: TI
IC2	8-759-200-80	s	TC4050BF: TOSHIBA
IC3	8-759-009-11	s	MC14070BF: MOTOROLA
IC4	8-759-204-71	s	TC40H163F: TOSHIBA
IC5	8-759-925-74	s	SN74HC04NS: TI
IC6	8-759-915-76	s	TL7700CP: TI
IC7	8-759-971-23	s	MSM80C49-757GS-K: OKI
IC8	8-759-971-23	s	MSM80C49-757GS-K: OKI
IC9	8-759-204-90	s	TC40H374F: TOSHIBA
IC10	8-759-204-83	s	TC40H245F: TOSHIBA
IC11	8-759-204-60	s	TC40H139F: TOSHIBA
IC12	8-759-204-51	s	TC40H008F: TOSHIBA
IC13	8-759-204-89	s	TC40H373F: TOSHIBA
IC14	8-759-722-53	s	27C64-C35FNL1.04
IC15	8-759-102-62	s	UPD82C43G: NEC
IC16	8-759-102-82	s	UPD82C43G: NEC
IC17	8-759-100-93	s	UPC393G2: NEC
IC18	8-759-009-05	s	MC14051BF: MOTOROLA
IC19	8-759-009-05	s	MC14061BF: MOTOROLA
IC20	8-759-009-49	s	MC14532BF: MOTOROLA
IC21	8-759-204-83	s	TC40H245F: TOSHIBA
L1	1-410-848-11	s	100
Q1	8-729-105-29	s	2SA1385
R93	1-214-525-11	s	METAL 47.1% 1/8W
RB1	1-232-509-00	s	COMPOSITION CIRCUIT BLOCK
RV1	1-228-473-00	s	CERMET 5K
RV2	1-228-474-00	s	CERMET 10K
RV3	1-228-474-00	s	CERMET 10K
RV4	1-228-474-00	s	CERMET 10K
RV5	1-228-474-00	s	CERMET 10K
RV6	1-228-474-00	s	CERMET 10K
RV7	1-228-474-00	s	CERMET 10K
RV8	1-228-474-00	s	CERMET 10K
S1	1-553-252-00	s	ROTARY
S2	1-571-289-11	s	DIGITAL ROTARY (DIP)
S3	1-570-623-11	s	DIP
S4	1-570-602-11	s	DIP
S5	1-570-610-11	s	TOGGLE

Ref.No.	Parts No.	SP	Description
S7	1-571-289-11	s	DIGITAL ROTARY (DIP)
S8	1-571-289-11	s	DIGITAL ROTARY (DIP)
X1	1-527-941-00	s	10.944MHz

MB-207 BOARD

	A-7513-861-A	o	MOUNTED CIRCUIT BOARD "MB-207"
	1-236-279-11	s	FILTER, MPX
CN1	1-560-746-00	o	RECEPTACLE, 53P FEMALE
CN2	1-560-746-00	o	RECEPTACLE, 53P FEMALE
CN3	1-560-746-00	o	RECEPTACLE, 53P FEMALE
CN4	1-560-746-00	o	RECEPTACLE, 53P FEMALE
CN5	1-560-746-00	o	RECEPTACLE, 53P FEMALE
CN6	1-506-634-11	o	RECEPTACLE, 10P MALE
	1-563-119-11	o	PLUG HOUSING 10P
	1-563-115-11	o	PLUG CONTACT
CN7	1-506-636-11	o	RECEPTACLE, 14P MALE
	1-563-121-11	o	PLUG HOUSING 14P
	1-563-115-11	o	PLUG CONTACT
CN8	1-506-636-11	o	RECEPTACLE, 14P MALE
	1-563-121-11	o	PLUG HOUSING 14P
	1-563-115-11	o	PLUG CONTACT
CN9	1-506-633-11	o	RECEPTACLE, 8P MALE
	1-563-118-11	o	PLUG HOUSING 8P
	1-563-115-11	o	PLUG CONTACT
CN10	1-506-632-11	o	RECEPTACLE, 6P MALE
	1-563-117-11	o	PLUG HOUSING 6P
	1-563-115-11	o	PLUG CONTACT
CN11	1-506-635-11	o	RECEPTACLE, 12P MALE
	1-563-753-11	o	PLUG HOUSING 12P
	1-563-115-11	o	PLUG CONTACT
CN12	1-506-638-11	o	RECEPTACLE, 18P MALE
	1-563-123-11	o	PLUG HOUSING 18P
	1-563-115-11	o	PLUG CONTACT
CN13	1-506-631-11	o	RECEPTACLE, 4P MALE
	1-563-116-11	o	PLUG HOUSING 4P
	1-563-115-11	o	PLUG CONTACT
CN15	1-506-631-11	o	RECEPTACLE, 4P MALE
	1-563-116-11	o	PLUG HOUSING 4P
	1-563-115-11	o	PLUG CONTACT
CN16	1-506-631-11	o	RECEPTACLE, 4P MALE
	1-563-116-11	o	PLUG HOUSING 4P
	1-563-115-11	o	PLUG CONTACT
CN18	1-506-636-11	o	RECEPTACLE, 14P MALE
	1-563-121-11	o	PLUG HOUSING 14P
	1-563-115-11	o	PLUG CONTACT
CN19	1-506-633-11	o	RECEPTACLE, 8P MALE
	1-563-118-11	o	PLUG HOUSING 8P
	1-563-115-11	o	PLUG CONTACT
CN20	1-506-632-11	o	RECEPTACLE, 6P MALE
	1-563-117-11	o	PLUG HOUSING 6P
	1-563-115-11	o	PLUG CONTACT
CN22	1-560-746-00	o	RECEPTACLE, 53P FEMALE
CN23	1-560-746-00	o	RECEPTACLE, 53P FEMALE
D101	8-719-911-55	s	DIODE UO5G

Ref.No.	Parts No.	SP	Description
SG-131/131P BOARD			
	A-7513-605-A	o	MOUNTED CIRCUIT BOARD "SG-131" (J,UC)
	A-7513-606-A	o	MOUNTED CIRCUIT BOARD "SG-131P" (EK)
C1	1-127-512-00	s	ELECT(SOLID) 10 20% 25V
C3	1-127-487-00	s	ELECT(SOLID) 4.7 20% 10V
C6	1-127-491-00	s	ELECT(SOLID) 22 20% 6.3V
C9	1-127-516-11	s	ELECT(SOLID) 220 20% 10V
C10	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C11	1-127-512-00	s	ELECT(SOLID) 10 20% 16V
C12	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C15	1-127-515-11	s	ELECT(SOLID) 47 20% 10V
C16	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C23	1-127-512-00	s	ELECT(SOLID) 10 20% 25V
C24	1-127-512-00	s	ELECT(SOLID) 10 20% 25V
C25	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C26	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C27	1-162-875-11	s	CERAMIC 68PF 5% 50V
C28	1-127-512-00	s	ELECT(SOLID) 10 20% 25V
C29	1-127-512-00	s	ELECT(SOLID) 10 20% 25V
C33	1-127-518-11	s	ELECT(SOLID) 100 20% 16V
C34	1-127-518-11	s	ELECT(SOLID) 100 20% 16V
C35	1-127-512-00	s	ELECT(SOLID) 10 20% 25V
C36	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C37	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C38	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C40	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C42	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C43	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C46	1-162-732-11	s	CERAMIC 820PF 5% 50V
C47	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C50	1-161-049-00	s	CERAMIC 0.0068 10% 25V
C52	1-162-716-11	s	CERAMIC 220PF 5% 50V
C53	1-162-718-11	s	CERAMIC 220PF 5% 50V
C56	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C59	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C60	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C62	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C63	1-162-718-11	s	CERAMIC 220PF 5% 50V
C64	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C65	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C72	1-127-512-00	s	ELECT(SOLID) 10 20% 16V
C73	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C75	1-162-710-11	s	CERAMIC 100PF 5% 50V
C77	1-130-480-00	s	MYLAR 0.0056 5% 50V
C78	1-102-116-00	s	CERAMIC 680PF 10% 50V
C79	1-161-043-00	s	CERAMIC 0.0022 10% 25V
C81	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C82	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C83	1-127-491-00	s	ELECT(SOLID) 22 20% 10V
C85	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C87	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C90	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C92	1-127-496-00	s	ELECT(SOLID) 6.8 20% 16V
C94	1-127-512-00	s	ELECT(SOLID) 10 20% 16V
C96	1-127-496-00	s	ELECT(SOLID) 6.8 20% 16V
C100	1-127-489-00	s	ELECT(SOLID) 10 20% 10V
C107	1-127-512-00	s	ELECT(SOLID) 10 20% 16V
C109	1-163-123-00	s	CERAMIC CHIP 180PF 5% 50V
C114	1-127-512-00	s	ELECT(SOLID) 10 20% 25V
CN1	1-560-747-00	o	RECEPTACLE, 53P MALE
CP1	1-567-085-00	s	OSCILLATOR 14.31818MHz (J,UC)
CP1	1-567-086-11	s	OSCILLATOR 14.1875MHz (EK)
CP2	1-567-084-00	s	OSCILLATOR 14.31818MHz (J,UC)
CP2	1-567-654-11	s	OSCILLATOR 14.1875MHz (EK)
D1	8-719-981-00	s	ERB81-004
D2	8-719-100-03	s	1S2835
D4	8-719-100-03	s	1S2835
D5	8-719-109-97	s	RD6.8ES-B2
D6	8-719-109-97	s	RD6.8ES-B2
D7	8-719-101-23	s	1SS123
D8	8-719-101-23	s	1SS123
D9	8-719-100-03	s	1S2835 (J,UC)
D10	8-719-100-03	s	1S2835
D11	8-719-101-23	s	1SS123
D12	8-719-101-23	s	1SS123
D13	8-719-101-23	s	1SS123
D14	8-719-100-05	s	1S2837
D15	8-719-100-05	s	1S2837
D16	8-719-100-05	s	1S2837
D17	8-719-101-23	s	1SS123
D30	8-719-920-05	s	SLP281C-50
D31	8-719-920-05	s	SLP281C-50

Ref. No.	Parts No.	SP	Description
FL1	1-235-572-11	s	LOW PASS
IC1	8-759-908-95	s	TL1451CNS : TI
IC2	8-759-101-12	s	UPC311G2 : NEC
IC3	8-759-030-16	s	TL062ACPS : TI
IC4	8-752-335-47	s	CXD1218M : SONY
IC5	8-759-030-16	s	TL062ACPS : TI
IC6	8-759-009-07	s	MC14053BF : MOTOROLA
IC7	8-759-907-81	s	SN74LS221NS : TI
IC8	8-759-030-16	s	TL062ACPS : TI
IC9	8-759-982-21	s	RC78L05A : RAYTHEON
IC10	8-759-201-61	s	TC40H004F : TOSHIBA
IC11	8-759-927-46	s	SN74HC00ANS : TI
IC12	8-759-239-58	s	TC74HC221AF : TOSHIBA
IC13	8-759-201-61	s	TC40H004F : TOSHIBA
IC14	8-759-928-19	s	SN74HC158NS : TI
IC15	8-752-332-67	s	CXD1217M : SONY
IC16	8-759-239-58	s	TC74HC221AF : TOSHIBA
IC17	8-759-907-21	s	CX7969 : SONY
IC18	8-759-201-61	s	TC40H004F : TOSHIBA
IC19	8-759-201-53	s	TC40H000F : TOSHIBA
IC20	8-759-239-58	s	TC74HC221AF : TOSHIBA
IC21	8-759-239-58	s	TC74HC221AF : TOSHIBA
IC22	8-759-927-46	s	SN74HC00ANS : TI
IC23	8-759-925-74	s	SN74HC04ANS : TI
IC24	8-759-204-72	s	TC40H164F : TOSHIBA
IC25	8-759-030-16	s	TL062ACPS : TI
IC26	8-752-335-47	s	CXD1218M : SONY
IC27	8-759-928-29	s	SN74HC175ANS : TI
IC28	8-759-928-17	s	SN74HC153ANS : TI
IC29	8-759-902-88	s	SN74LS123NS : TI
IC30	8-759-030-16	s	TL062ACPS : TI
IC31	8-759-030-16	s	TL062ACPS : TI
IC32	8-759-030-16	s	TL062ACPS : TI
IC33	8-759-204-63	s	TC40H151F : TOSHIBA
L2	1-410-948-11	s	100
L3	1-410-513-11	s	22
L8	1-410-513-11	s	22 (J, UC)
L17	1-410-756-11	s	150
L24	1-410-756-11	s	150
Q1	8-729-105-29	s	2SA1385
Q2	8-729-101-25	s	2SC1009A
Q3	8-729-101-25	s	2SC1009A
Q4	8-729-101-25	s	2SC1009A
Q5	8-729-101-25	s	2SC1009A

Ref. No.	Parts No.	SP	Description
Q6	8-729-101-25	s	2SC1009A
Q7	8-729-101-25	s	2SC1009A
Q8	8-729-122-63	s	2SA1226
Q9	8-729-122-63	s	2SA1226
Q10	8-729-101-25	s	2SC1009A
Q11	8-729-122-63	s	2SA1226
Q12	8-729-101-25	s	2SC1009A
Q13	8-729-101-25	s	2SC1009A
Q14	8-729-101-25	s	2SC1009A
Q15	8-729-113-33	s	2SB733-4
Q16	8-729-177-42	s	2SD774-3
Q17	8-729-100-76	s	2SA812
Q18	8-729-100-76	s	2SA812 (J, UC)
Q19	8-729-100-66	s	2SC1623 (J, UC)
Q20	8-729-900-53	s	DTC114EK
Q21	8-729-100-66	s	2SC1623
Q22	8-729-100-76	s	2SA812
Q23	8-729-100-76	s	2SA812
Q24	8-729-100-66	s	2SC1623
Q25	8-729-100-66	s	2SC1623
Q26	8-729-100-66	s	2SC1623
Q27	8-729-100-66	s	2SC1623
Q28	8-729-100-66	s	2SC1623
Q29	8-729-100-66	s	2SC1623
R37	1-216-654-11	s	METAL 1300 0.5% 1/10W
R198	1-216-661-11	s	METAL 2.7K 0.50% 1/10W (J, UC)
R198	1-216-665-11	s	METAL 3.9K 0.50% 1/10W (EK)
RV1	1-228-457-00	s	CERMET 2K
RV2	1-228-471-00	s	CERMET 1K
RV3	1-228-459-00	s	CERMET 10K
RV5	1-228-459-00	s	CERMET 10K
RV6	1-228-456-00	s	CERMET 5K
RV7	1-228-459-00	s	CERMET 10K (J, UC)
RV8	1-228-459-00	s	CERMET 10K
RV9	1-228-459-00	s	CERMET 10K
RV10	1-228-460-00	s	CERMET 20K
RV11	1-228-459-00	s	CERMET 10K
RV12	1-228-472-00	s	CERMET 2K
RV13	1-228-459-00	s	CERMET 10K
RV14	1-228-460-00	s	CERMET 20K
S1	1-553-252-00	s	ROTARY (J, UC)
S2	1-570-611-11	s	TOGGLE (J, UC)
THP1	1-808-188-00	s	THERMISTOR (POSITIVE)

Ref. No.	Parts No.	SP	Description
SW-225 BOARD			
	1-624-112-11	o	PRINTED CIRCUIT BOARD "SW-225"
S1	1-571-071-11	s	TOGGLE "OUTPUT"
S2	1-571-071-11	s	TOGGLE "W/B BAL AUTO/MANU/PRESET"
S3	1-554-395-11	s	TOGGLE "W/B BAL AWB/ABB"
S4	1-571-070-11	s	TOGGLE "SHUTTER"
SW-242 BOARD			
	1-624-115-11	o	PRINTED CIRCUIT BOARD "SW-242"
S1	1-554-955-11	s	ROTARY "GAIN"

Ref. No.	Parts No.	SP	Description
TR-46 BOARD			
	A-7513-859-A	o	MOUNTED CIRCUIT BOARD "TR-46"
C6	1-107-044-00	s	MICA 3.3PF ±0.5PF 500
C9	1-107-044-00	s	MICA 3.3PF ±0.5PF 500
C12	1-107-044-00	s	MICA 3.3PF ±0.5PF 500
C24	1-107-041-00	s	MICA 1.8PF ±0.5PF 500
C26	1-162-674-11	s	CERAMIC 39PF 5% 50V
C27	1-162-748-11	s	CERAMIC 62PF 5% 50V
C41	1-107-049-00	s	MICA 8.2PF ±0.5PF 500
C113	1-163-131-00	s	CERAMIC CHIP 390PF 5% 50V
C114	1-102-963-00	s	CERAMIC 39PF 5% 50V
C115	1-102-973-00	s	CERAMIC 100PF 5% 50V
C123	1-101-880-00	s	CERAMIC 47PF 5% 50V
C124	1-163-131-00	s	CERAMIC CHIP 390PF 5% 50V
C137	1-163-123-00	s	CERAMIC CHIP 180PF 5% 50V
C139	1-101-881-00	s	CERAMIC 150PF 5% 50V
C140	1-101-881-00	s	CERAMIC 150PF 5% 50V
C141	1-163-131-00	s	CERAMIC CHIP 390PF 5% 50V
C147	1-163-123-00	s	CERAMIC CHIP 180PF 5% 50V
C149	1-102-976-00	s	CERAMIC 180PF 5% 50V
C150	1-102-977-00	s	CERAMIC 200PF 5% 50V
C151	1-163-131-00	s	CERAMIC CHIP 390PF 5% 50V
C166	1-163-123-00	s	CERAMIC CHIP 180PF 5% 50V
C168	1-162-767-11	s	CERAMIC 0.0015 5% 50V
C171	1-130-487-00	s	MYLAR 0.022 5% 50V
C173	1-162-768-11	s	CERAMIC 0.0012 5% 50V
C178	1-102-959-00	s	CERAMIC 22PF 5% 50V
C180	1-102-962-00	s	CERAMIC 30PF 5% 50V
C186	1-163-135-00	s	CERAMIC CHIP 560PF 5% 50V
C190	1-128-101-11	s	ELECT 100 20% 16V
C195	1-163-127-00	s	CERAMIC CHIP 270PF 5% 50V
C196	1-163-135-00	s	CERAMIC CHIP 560PF 5% 50V
C197	1-128-101-11	s	ELECT 100 20% 16V
C208	1-163-135-00	s	CERAMIC CHIP 560PF 5% 50V
C214	1-163-123-00	s	CERAMIC CHIP 180PF 5% 50V
C215	1-163-131-00	s	CERAMIC CHIP 390PF 5% 50V
C217	1-102-959-00	s	CERAMIC 22PF 5% 50V
C219	1-101-881-00	s	CERAMIC 39PF 5% 50V
C225	1-163-135-00	s	CERAMIC CHIP 560PF 5% 50V
C228	1-162-748-11	s	CERAMIC 62PF 5% 50V
C232	1-162-875-11	s	CERAMIC 68PF 5% 50V
C237	1-130-479-00	s	MYLAR 0.0047 10% 50V
C238	1-102-941-00	s	CERAMIC 4PF ±0.5PF 50V

Ref.No.	Parts No.	SP	Description
CF101	1-577-204-11	s	FILTER, CERAMIC
CF102	1-577-203-11	s	FILTER, CERAMIC
CF103	1-577-206-11	s	FILTER, CERAMIC
CF104	1-577-365-11	s	FILTER, CERAMIC
CF105	1-577-208-11	s	FILTER, CERAMIC
CF106	1-577-209-11	s	FILTER, CERAMIC
CF107	1-577-207-11	s	FILTER, CERAMIC
CF108	1-577-207-11	s	FILTER, CERAMIC
CN1	1-560-747-00	o	RECEPTACLE, 53P MALE
CV1	1-141-298-11	s	CERAMIC 10P
D2	8-719-100-03	s	1S2835
D4	8-719-100-03	s	1S2835
D5	8-719-100-03	s	1S2835
D6	8-719-100-03	s	1S2835
D8	8-713-300-00	s	1T33
D9	8-713-300-00	s	1T33
D101	8-719-109-97	s	RD6.8EB2
D102	8-719-109-97	s	RD6.8EB2
D103	8-719-118-38	s	1SZ46A
D104	8-719-915-30	s	FC53M
D105	8-719-101-23	s	1SS123
D106	8-719-101-41	s	RD3.9EL2
D107	8-719-101-23	s	1SS123
D108	8-719-101-23	s	1SS123
D109	8-719-101-23	s	1SS123
D110	8-719-101-23	s	1SS123
D111	8-719-915-30	s	FC53M
D112	8-719-101-23	s	1SS123
D113	8-719-101-23	s	1SS123
D114	8-719-915-30	s	FC53M
D115	8-719-101-23	s	1SS123
D116	8-719-101-97	s	1SS97-1
D117	8-719-100-03	s	1S2835
D118	8-719-109-51	s	RD2.0ES-B2
D119	8-719-920-05	s	SLP28IC-50
D120	8-719-101-23	s	1SS123
D121	8-719-100-05	s	1S2837
D122	8-719-911-19	s	1SS119
D123	8-719-911-19	s	1SS119
D124	8-719-105-28	s	RD2.4M
FL1	1-236-272-11	s	BAND PASS
FL101	1-236-275-11	s	HIGH PASS 5.7MHz

Ref.No.	Parts No.	SP	Description
IC1	8-759-100-93	s	UPC393G2: NEC
IC2	8-759-030-16	s	TL062ACPS: TI
IC4	8-759-009-05	s	MC14051BF: MOTOROLA
IC101	8-759-030-16	s	TL062ACPS: TI
IC102	8-759-030-16	s	TL062ACPS: TI
IC103	8-759-100-93	s	UPC393G2: NEC
IC104	8-759-908-17	s	TL082CPS: TI
IC105	8-759-710-52	s	NJM567M: JRC
IC106	8-759-201-36	s	TA7303P: TOSHIBA
IC107	8-759-030-16	s	TL062ACPS: TI
IC108	8-759-324-12	s	HA12412: HITACHI
IC109	8-759-030-16	s	TL062ACPS: TI
IC110	8-759-201-36	s	TA7303P: TOSHIBA
L5	1-408-417-11	s	47
L6	1-422-595-12	s	COIL, AIR CORE
L7	1-422-594-11	s	COIL, AIR CORE
L106	1-410-513-11	s	22
L108	1-410-513-11	s	22
L112	1-408-357-11	s	33
L114	1-410-328-11	s	10
L116	1-410-328-11	s	10
LV101	1-459-889-11	s	COIL, VARIABLE
LV102	1-459-892-11	s	COIL, VARIABLE
LV103	1-459-888-11	s	COIL, VARIABLE
LV104	1-459-888-11	s	COIL, VARIABLE
LV105	1-459-890-11	s	COIL, VARIABLE
LV106	1-459-890-11	s	COIL, VARIABLE
Q1	8-729-200-87	s	2SC2714Y
Q2	8-729-312-22	s	2SA1122C
Q3	8-729-200-87	s	2SC2714Y
Q4	8-729-200-87	s	2SC2714Y
Q5	8-729-312-22	s	2SA1122C
Q6	8-729-100-75	s	2SA812-M5
Q7	8-729-200-87	s	2SC2714Y
Q8	8-729-200-87	s	2SC2714Y
Q9	8-729-100-66	s	2SC1623
Q10	8-729-103-69	s	2SC1730
Q11	8-729-204-20	s	2SC2753
Q12	8-729-200-87	s	2SC2714Y
Q13	8-729-105-47	s	2SC2026-L
Q14	8-729-140-28	s	2SA1459-L
Q15	8-729-204-20	s	2SC2753

Ref.No.	Parts No.	SP	Description
Q16	8-729-105-47	s	2SC2026-L
Q17	8-729-140-28	s	2SA1459-L
Q18	8-729-200-87	s	2SC2714Y
Q101	8-729-113-32	s	2SB733
Q102	8-729-177-32	s	2SD773
Q103	8-729-100-66	s	2SC1623
Q104	8-729-200-87	s	2SC2714Y
Q105	8-729-600-28	s	2SC634SP-8
Q106	8-729-100-66	s	2SC1623
Q107	8-729-200-87	s	2SC2714Y
Q108	8-729-100-75	s	2SA812-M5
Q109	8-729-100-66	s	2SC1623
Q110	8-729-200-87	s	2SC2714Y
Q111	8-729-101-25	s	2SC1009A
Q112	8-729-100-66	s	2SC1623
Q113	8-729-101-25	s	2SC1009A
Q114	8-729-200-87	s	2SC2714Y
Q115	8-729-200-87	s	2SC2714Y
Q116	8-729-122-63	s	2SA1226
Q117	8-729-200-87	s	2SC2714Y
Q118	8-729-122-63	s	2SA1226
Q119	8-729-200-87	s	2SC2714Y
Q120	8-729-122-63	s	2SA1226
Q121	8-729-100-75	s	2SA812-M5
Q122	8-729-100-75	s	2SA812-M5
Q123	8-729-100-66	s	2SC1623
Q124	8-729-100-66	s	2SC1623
Q125	8-729-100-75	s	2SA812-M5
Q126	8-729-100-66	s	2SC1623
Q127	8-729-100-66	s	2SC1623
Q128	8-729-122-63	s	2SA1226
Q129	8-729-122-63	s	2SA1226
Q130	8-729-100-66	s	2SC1623
Q131	8-729-100-66	s	2SC1623
Q132	8-729-100-75	s	2SA812-M5
Q133	8-729-109-41	s	2SK94-X1
Q134	8-729-100-66	s	2SC1623
Q135	8-729-122-63	s	2SA1226
Q136	8-729-122-63	s	2SA1226
Q137	8-729-100-66	s	2SC1623
Q138	8-729-100-66	s	2SC1623
Q139	8-729-122-63	s	2SA1226
Q140	8-729-122-63	s	2SA1226

Ref.No.	Parts No.	SP	Description
RV1	1-228-457-00	s	CERMET 2K
RV2	1-228-456-00	s	CERMET 1K
RV101	1-228-457-00	s	CERMET 2K
RV102	1-228-456-00	s	CERMET 1K
RV103	1-228-456-00	s	CERMET 1K
RV104	1-228-456-00	s	CERMET 1K
RV105	1-228-459-00	s	CERMET 10K
RV106	1-228-459-00	s	CERMET 10K
RV107	1-228-456-00	s	CERMET 1K
RV108	1-228-460-00	s	CERMET 20K
RV109	1-228-460-00	s	CERMET 20K
RV110	1-228-458-00	s	CERMET 5K
T101	1-426-416-11	s	FM, COIL 6.8MHz

Ref.No.	Parts No.	SP	Description
VA-81 BOARD			
	A-7513-860-A	o	MOUNTED CIRCUIT BOARD "VA-81"
C15	1-102-947-00	s	CERAMIC 10PF ±0.5PF 50V
C23	1-102-937-00	s	CERAMIC 4PF ±0.25PF 50V
C30	1-161-485-00	s	CERAMIC 0.1 50V
C32	1-102-949-00	s	CERAMIC 12PF 5% 50V
C42	1-102-965-00	s	CERAMIC 39PF 5% 50V
C43	1-102-976-00	s	CERAMIC 180PF 5% 50V
CN1	1-560-747-00	o	RECEPTACLE, 53P MALE
D1	8-719-109-97	s	RD6.8ES-B2
D2	8-719-109-97	s	RD6.8ES-B2
D3	8-719-118-38	s	1SZ46A
D4	8-719-100-03	s	1S2835
D5	8-719-100-03	s	1S2835
D6	8-719-100-03	s	1S2835
D7	8-719-100-03	s	1S2835
D8	8-719-101-23	s	1SS123
D9	8-719-100-03	s	1S2835
D10	8-719-100-03	s	1S2835
IC1	8-759-906-54	s	TL064CNS: TI
IC2	8-759-201-61	s	TC40H004F: TOSHIBA
Q1	8-729-113-32	s	2SB733
Q2	8-729-177-32	s	2SD773
Q3	8-729-100-66	s	2SC1623
Q4	8-729-100-66	s	2SC1623
Q5	8-729-200-87	s	2SC2714Y
Q6	8-729-200-87	s	2SC2714Y
Q7	8-729-100-66	s	2SC1623
Q8	8-729-312-22	s	2SA1122C
Q9	8-729-200-87	s	2SC2714Y
Q10	8-729-101-25	s	2SC1009A
Q11	8-729-312-22	s	2SA1122C
Q12	8-729-312-22	s	2SA1122C
Q13	8-729-100-75	s	2SA812-M5
Q14	8-729-100-75	s	2SA812-M5
Q15	8-729-200-87	s	2SC2714Y
Q16	8-729-200-87	s	2SC2714Y
Q17	8-729-312-22	s	2SA1122C
Q18	8-729-312-22	s	2SA1122C
Q19	8-729-100-66	s	2SC1623
Q20	8-729-200-87	s	2SC2714Y
Q21	8-729-200-87	s	2SC2714Y
Q22	8-729-100-66	s	2SC1623
Q23	8-729-312-22	s	2SA1122C
Q24	8-729-200-87	s	2SC2714Y
Q25	8-729-101-25	s	2SC1009A
Q26	8-729-312-22	s	2SA1122C
Q27	8-729-312-22	s	2SA1122C
Q28	8-729-100-75	s	2SA812-M5
Q29	8-729-100-75	s	2SA812-M5
Q30	8-729-200-87	s	2SC2714Y
Q31	8-729-200-87	s	2SC2714Y
Q32	8-729-312-22	s	2SA1122C
Q33	8-729-312-22	s	2SA1122C
Q34	8-729-100-66	s	2SC1623
Q35	8-729-200-87	s	2SC2714Y
Q36	8-729-200-87	s	2SC2714Y
Q37	8-729-100-66	s	2SC1623
Q38	8-729-312-22	s	2SA1122C
Q39	8-729-200-87	s	2SC2714Y
Q40	8-729-101-25	s	2SC1009A
Q41	8-729-312-22	s	2SA1122C
Q42	8-729-312-22	s	2SA1122C
Q43	8-729-100-75	s	2SA812-M5
Q44	8-729-100-75	s	2SA812-M5
Q45	8-729-200-87	s	2SC2714Y
Q46	8-729-200-87	s	2SC2714Y
Q47	8-729-312-22	s	2SA1122C
Q48	8-729-312-22	s	2SA1122C
Q49	8-729-100-75	s	2SA812-M5
Q50	8-729-100-66	s	2SC1623
Q51	8-729-100-66	s	2SC1623
Q52	8-729-100-66	s	2SC1623
Q53	8-729-100-66	s	2SC1623
Q54	8-729-100-66	s	2SC1623
RB1	1-235-531-11	s	NETWORK
RB2	1-235-533-11	s	NETWORK
RB3	1-235-532-11	s	NETWORK

Ref.No.	Parts No.	SP	Description
RV1	1-228-457-00	s	CERMET 2K
RV2	1-228-459-00	s	CERMET 10K
RV3	1-228-458-00	s	CERMET 5K
RV4	1-228-456-00	s	CERMET 1K
RV5	1-228-458-00	s	CERMET 5K
RV6	1-228-460-00	s	CERMET 20K
RV7	1-228-458-00	s	CERMET 5K

FRAME (1/2)

RV103	1-226-786-00	s	CERMET 10K "IRIS"
RV104	1-226-786-00	s	CERMET 10K "MASTER BLACK"
S103	1-570-172-11	s	PUSH "CALL"
S104	1-553-969-00	s	TOGGLE "KNEE"
S105	1-571-290-11	s	TOGGLE "AUTO SETUP"
S106	1-553-969-00	s	TOGGLE "IRIS"

Ref.No.	Parts No.	SP	Description
FRAME (2/2)			
[redacted]		s	SWITCHING REGULATOR
C101	1-161-059-00	s	CERAMIC 0.047 10% 25V
C102	1-161-059-00	s	CERAMIC 0.047 10% 25V
CN100	1-564-968-11	s	RECEPTACLE, 16P FEMALE "RADIO LINC"
CN101	1-564-968-11	s	RECEPTACLE, 16P FEMALE "MSU"
CN102	1-564-968-11	s	RECEPTACLE, 16P FEMALE "BKP"
CN103	1-564-968-11	s	RECEPTACLE, 16P FEMALE "RCP"
CN111	1-560-787-00	s	RD COAXIAL
CN119	1-561-376-00	s	RECEPTACLE, 4P FEMALE "WF MODE"
CN120	1-509-184-51	s	RECEPTACLE, 3P FEMALE "MIC" (J)
CN120	1-509-176-51	s	RECEPTACLE, 3P MALE "MIC" (UC, EK)
CN122	1-561-846-31	s	RECEPTACLE, 7P MALE "R TALLY/INCOM"
CN123	1-561-846-31	s	RECEPTACLE, 7P MALE "G TALLY/PGM"
J101	1-507-606-11	s	PHONE "INCOM"
J102	1-507-606-11	s	PHONE "PGM"
R101	1-247-843-11	s	CARBON 3.3K 5% 1/4W
R102	1-247-843-11	s	CARBON 3.3K 5% 1/4W
RV101	1-230-817-11	s	CARBON 5K "INCOM"
RV102	1-230-817-11	s	CARBON 5K "PGM"
S101	1-553-626-11	s	TOGGLE "MIC ON/OFF"
S102	1-553-626-11	s	TOGGLE "COMM/PRIV"
TRIAX ASSY			
C101	1-136-204-11	s	FILM 0.015 5% 630V
CN110	1-565-796-11	s	COAXIAL "TRIAX" (UC)
	1-565-798-11	s	COAXIAL "TRIAX" (J)
	1-560-744-00	s	COAXIAL MALE "TRIAX" (EK)

Ref.No.	Parts No.	SP	Description
PACKING MATERIAL & ACCESSORY			
	A-7513-864-A	o	EXTENTION BOARD "EX-189"
	A-7612-310-A	o	PLATE ASSY, NUMBER
	A1-551-812-00	s	POWER CORD (UC)
	1-534-754-00	s	POWER CORD (J)
	1-534-819-00	s	POWER CORD (EK)
	1-560-343-00	s	4P PLUG MALE

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